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CONDOR CLIFFS - THE NEW ANDEAN CONDOR EXHIBIT AT CHESTER ZOO

by Roger Wilkinson

Andean Condors *Vultur gryphus* have been kept at Chester Zoo for over 25 years. A young pair were first received at Chester in April 1971. The male of this pair was then exchanged in 1982 for an older male that had been at Amsterdam Zoo since 1958. This bird and our original female hatched a chick in 1985 which failed to survive and was at the time believed to have been killed by the male parent.



Roger Wilkinson

The pair of Andean Condors at Chester Zoo

Since then most eggs laid by this pair have been removed for artificial incubation and ten chicks have been successfully hand-reared from the 11 hatched. These youngsters can now be seen at Antwerp Zoo, Moscow Zoo, Welsh Mountain Zoo (Colwyn Bay), Chessington World of Adventures, Colchester Zoo, the National Birds of Prey Centre (Newent), the Hawk

Conservancy (Andover) and Flamingoland (Malton). We are disappointed that no chicks have been parent-reared at Chester. It was thought that lack of privacy may have been one factor acting against achieving successful parenting.

The new Condor Cliffs exhibit was designed by members of the Bird Department working with the Estate Division at the zoo and was part funded by a generous legacy from the late Sally, Duchess of Westminster. The Condor Cliffs was officially opened on Tuesday, 17th December by Sally's nephew, the zoo's president, His Grace The Duke of Westminster.



Roger Wilkinson

Condor Cliffs the new exhibit for Andean Condors

The aviary occupies the site of the former Brown Bear pit. The front wall of the latter was completely demolished and replaced by a chain-link fence to permit ground level viewing. A steel framework reaching to 12m (39ft) high supports the 40mm (1½in) square nylon mesh that forms the tented roof of this enclosure. New artificial cliff work has been constructed along the entire 38m (approx. 124ft) back wall of the enclosure and this includes a number of natural looking caves for roosting, shelter and nesting. A rockwork scree extends forwards from this cliff to meet the large planted, grassy area which occupies an extensive area of over 1,200sq m (approx. 12,900sq ft). A major feature of the aviary is a large waterfall which has been constructed from natural local sandstone. This new aviary represents an important advance for the exhibition and improved welfare of Andean Condors at Chester Zoo.

A partly hidden trapping area has been built close to the keeper access. This trapping cage will be baited with food to allow trapping of the condors when necessary. However, the normal feeding routine will be to offer the birds the opportunity to feed on meat attached to the rib cage of a specially commissioned artificial Llama skeleton. This skeleton has been located near the waterfall towards the front of the aviary and the possibility of set feeding times announced to our visitors will now be explored.

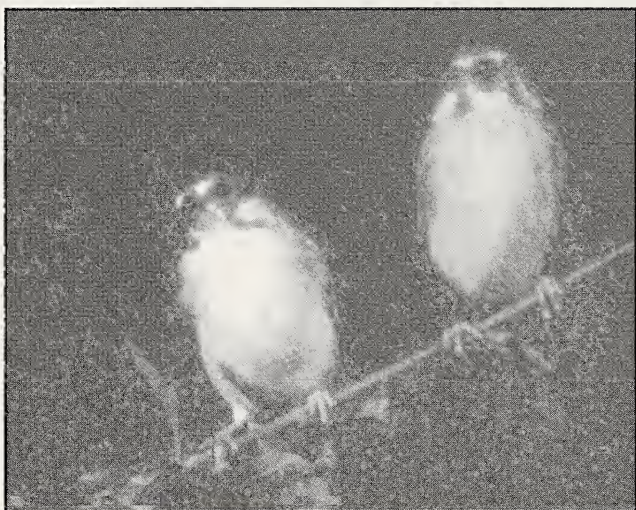
It may be that public perception will shift from the feeling that the birds had too small a living space in their previous aviary to one that the new Condor Cliffs aviary is under-occupied! I have already been asked by both visitors and by zoo staff what other species may join the condors. Andean Condors are large aggressive birds which would normally be considered incompatible with other bird species in small aviaries. Condor Cliffs was specifically developed to re-house our Andean Condors and as such any extra occupants must be considered a happy bonus. With a view to increasing the new exhibit's potential for visitor education about the role of scavengers it would be very useful to include with the condors a collection of South American vultures and caracaras. Whether this will work satisfactorily will greatly depend on the individual temperaments of our Andean Condors but also on the knowledge and skill of our keepers. I would be pleased to hear from anyone who has had experience of managing a similar species combination or tried mixing adult Andean Condors with other birds.

Dr Roger Wilkinson is Curator of Birds at Chester Zoo. He is on The Avicultural Society Council.

FURTHER NOTES ON THE LEMON-BREASTED CANARY *Serinus citrinipectus*

by Neville Brickell

In 1983, at the time of my first article about this species (*Avicultural Magazine*, Vol.89, No.3, p.159), a nest had yet to be recorded in the field and only two captive breedings had been documented. Lawson (1970) stated that it had been bred on a number of occasions. It was, however, difficult to find any aviculturist who kept or bred this species some 26 years ago. Probably he was referring to successful breedings in Zimbabwe, with whom we had little contact in those days.



Neville Brickell

Pair of Lemon-breasted Canaries (the male is on the left)

The first captive record by Lawson (of Information and Research Services) made mention of grass stems and inflorescence tops, roots and large feathers, with a cup 40mm (approx. 1½ in) in diameter and 30mm (approx. 1¼ in) deep which was then lined entirely with coir. The pair had selected the top of a wooden nest-box on which to construct their nest, even though there were many other more natural sites in the aviary. The second captive record was by Joao in Mozambique, who described the cup-shaped nest as being built of grasses and then lined with feathers. More recently, Clewlow and Koen, both members of the Natal Bird Breeder's Society, supplied felt-lined canary nest-pans which also contained coir and were then lined with moss and feathers. In addition, Clewlow also had young reared successfully in a closed wicker basket with a small opening at one

end. In 1988, Robson (1990) discovered a nest in the Sodwana State Forest in north-eastern KwaZulu-Natal Province, South Africa. It contained three eggs. The nest was concealed within the fold of a Lala Palm *Hyphaene natalensis* leaf 1.6m (5ft 3in) above the ground. It was constructed of fibres and dead creeper stems, bits of hairy leaf (not identified) and chewed bark, bound together with the silk from caterpillar tubes. The cup was 45mm-55mm (approx. 1¾in-2¼in) in diameter and lined with long, thin, leaf fibres, peeled from the same species of palm. The single egg measured 15mm x 12mm. Recorded clutch sizes, incubation and nestling periods for captive birds are as follows:-

	Clutch Size	Number Hatched	Incubation Periods	Nestling Periods
Lawson	3	2 (third egg added)	13 - 14 days	Did not survive
Joao	4	3 (remaining egg clear)	12 -13 days	14 - 16 days
Koen	4	3 (remaining egg clear)	13 days	15 days
Clewlow	3	One pair reared two nestlings but those of the second pair did not survive.		14 days

Nestlings have pale pinkish skin and sparse whitish down. The bill is pale yellowish white and the mouth is bright yellow. Clewlow (1994) gave detailed information about this species' food requirements when rearing young. This consisted of the locally manufactured Avi-Plus canary/finch compound, to which was added hard-boiled egg, finely grated carrot and apple, shredded Swiss chard and spinach, and a teaspoonful of SMA infant milk formula. Half a cup of water was added to the above and produced a well tested and relished softfood. Mound termites were readily accepted as were the seeding heads of Guinea Grass *Panicum maximum* and Shepherd's Purse *Capsella bursa-pastoris*.

Acknowledgements

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HUSBANDRY AND BREEDING OF THE MOUNT APO LORIKEET *Trichoglossus johnstoniae* AT LORO PARQUE

by Roger G. Sweeney

The Mount Apo Lorikeet *Trichoglossus johnstoniae*, also sometimes referred to as the Mindanao Lorikeet or Mrs. Johnstone's Lorikeet, is designated full species status within the genus *Trichoglossus* (Forshaw, 1989). Two races have been described (Rand and Rabor, 1959; DuPont, 1971), but recent taxonomic assessments (Forshaw, 1989; Sweeney, unpublished) suggest that no differentia exist. The length of this species is 20cm (8in) (Forshaw, 1989). Weights recorded for five adult birds at Loro Parque produced a mean weight of 56g (range 52-59g), with no noticeable differences in body weight between males and females within the sample. The main plumage is green, with the forehead, lores and chin rose red, with a distinctive purple brown band reaching from the lores to the occiput. There is some yellow on the underside of the secondaries and throat. The breast feathers are yellowish green at the base, with darker green tips producing a barred appearance. The tail is green above and olive yellow below. The bill is orange-red in adult birds. The irides are red and the legs are greenish-grey.

This species is restricted to mountain regions of the island of Mindanao in the Philippines. The fact that this species is endemic to Mindanao has meant that it has rarely been seen outside of the Philippines. Its status in the wild is described as locally common, but its range is restricted and is being increasingly threatened by changes in land use. Very few historical records exist for this species in captivity. Almost certainly the first birds to be kept in captivity outside of the Philippines were those collected by Walter Goodfellow, who discovered this species in 1903, while on a collecting expedition for the English aviculturist, Mrs. Johnstone. Goodfellow gave this species the common name of Mrs. Johnstone's Lorikeet and three years after their collection from the wild, Mrs. Johnstone recorded the first captive breeding of this species when two chicks were reared in 1906 (Goodfellow, 1906). Since this time perhaps the only collection to have experience with this species before the 1990s was San Diego Zoo in California which has maintained and bred the Mount Apo Lorikeet for several decades. San Diego Zoo first bred the species in 1941, but no further breeding was achieved until the 1970s. From 1971 onwards, San Diego began to breed the Mount Apo Lorikeet more consistently and has in the last 25 years raised a large number of them. The Mount Apo Lorikeet started to become more widely kept in international aviculture in recent years as a result of successful captive breeding from 1990 onwards at the breeding centre of

Antonio de Dios in the Philippines. This has allowed first generation birds to be sent to several collections in Europe, which have included both Loro Parque in Spain and Vogelpark Walsrode in Germany (Sweeney, 1994, 1996). At Loro Parque this species first arrived in the collection in 1990, but the first successful rearing was not achieved until 1994. Since this time further breeding has followed and is now becoming more consistent. During the 1996 breeding season for example, two breeding pairs reared five chicks between them, four of which were parent-reared without intervention, the fifth chick being hand-reared.

Husbandry

Husbandry guidelines for the Mount Apo Lorikeet at Loro Parque do not vary significantly from other *Loriidae* species in the collection - all receive husbandry similar to guidelines published on the care of this family (Low, 1992; Sweeney, 1993). In more temperate countries the relatively small body size of these species means that extra care should be taken during periods of cold weather to ensure that they are not allowed to become chilled.



Roger G. Sweeney

A pair of Mount Apo Lorikeets on exhibition at Loro Parque.

As with most *Loriidae*, Mount Apo Lorikeets normally roost inside the nest-box during the night, but in countries where the temperature may fall towards freezing point at night it would be wise to consider bringing these birds inside during the winter months or moving their nest-box in to a

heated shelter if this has been included in the design of the aviary. As a guideline, Mount Apo Lorikeets, once established and acclimatised, should have a similar level of hardiness to the more familiar Goldie's Lorikeet *Trichoglossus goldiei* and Iris Lorikeet *Trichoglossus iris*.

One pair of Mount Apo Lorikeets at Loro Parque are housed in the exhibition area for *Loriidae*, while other breeding pairs are housed in suspended cages in the off-exhibit breeding areas of the park. Both types of housing used have produced successful breeding. The exhibition cage measures 250cm x 105cm x 215cm (approx. 8ft 2in x 3ft 6in x 7ft lin). Both sides and the back wall are solid, with the front panel and front half of the roof made of wire mesh; the back half of the roof is of solid construction. The nest-box in the exhibition cage is secured against the back wall. The exhibition cage is furnished with two main horizontal perches and in addition a fresh branch of pine wood is always present as chewing/play material. The suspended breeding cages used in our off-exhibit areas are made entirely from wire mesh and measure 300cm x 95cm x 95cm (9ft 10in x 3ft 1½in x 3ft 1½in). They are suspended at a height of 125cm (4ft 1¼in), measured from the ground to the base of the cage, which means that the height of perching in the cage is slightly above the head height of the keeper. The front area of the cage, where food and water is supplied, is covered by a roofing sheet to protect against excessive sun, rain and possible contamination of the food by wild birds living around the breeding area. The cages are positioned with the length of the cage extending away from the service pathway at a right-angle, with the nest-box positioned at the back and secured on the outside, with a hole in the wire allowing the birds to enter the nest-box. The area surrounding the back of the cage is planted and rarely disturbed other than for brief nest inspections. The suspended cages are also furnished with two main horizontal perches, one towards the front and one towards the back of the cage. Additional chewing and play material is also provided. In recent years captive raised Mount Apo Lorikeets have accepted a varied diet. At Loro Parque in recent years the birds have been maintained and bred while receiving two different commercial brands of liquid nectar food, but they have also always had access on a daily basis to various fruits (which can include on rotation apple, pear, papaya, banana, prickly-pear, cactus fruit etc.), green foods (commonly alfalfa or lettuce) and a dish which contains small millet/canary seed and a pelleted food (Lory Select). The diet used since 1995 onwards has been as follows:

7.00am: Biotropic Lory Nectar (approx. 100ml per pair prepared to manufacturer's instructions); segments of two or more fruits and green foods as described above; dish containing small millet and canary seed and Lory Select pellets (approx. 15g of seed and 15g of pellets, but this is varied

according to the appetite of each pair and additional pellets may be added).

3.00pm: The nectar dish is removed and replaced with another 100ml of freshly prepared food in a sterile dish and any remaining fruit is removed. Additional pellets are also given if the morning allowance has been completely eaten.

Particular attention is given to monitoring the quality of drinking water for our *Loriidae*. This is mainly due to specific water quality problems which are endemic to Tenerife. We have also noted that the control of certain medical problems common in *Loriidae*, particularly enterobacterial infections and protozoa can be dramatically improved once the water supply is controlled. At present we first chlorinate our water supply, then pass it through a reverse osmosis filtration machine, followed by an ultra-violet light sterilizer before it is used in our food preparation or offered as drinking water. Water used in the showers and to clean the cages is chlorinated but not filtered. Medical problems which have so far been recorded in captive populations of the Mount Apo Lorikeet have included Protozoal infections (notably trichomonas), enterobacterial infections (notably *E. coli*, salmonella, enteritis etc.), fungal infections and occasional ectoparasitic infestations. Birds can be screened for these ailments whenever they are routinely captured or handled.

Breeding

To date at Loro Parque most of the decisions about the pairing of birds have been made for population management reasons (genetic/demographic considerations) rather than allowing natural mate selection by birds in a communal situation. This has been the case due to the relatively limited population of birds that we have to work with and the need to keep potential breeding pairs unrelated. Even though pairings made have not been from mate-choice selection, so far almost no problems have been experienced as long as proper care is taken when first introducing the birds. We have had no cases of aggression, although the breeding success of pairs does reflect on their compatibility. In cases of pairs with poor breeding success, we try to change the pairings if we have a suitable choice of alternative partner available.

Nest-boxes used by Mount Apo Lorikeets at Loro Parque measure 46cm high x 17cm x 17cm (18in high x 6¾in x 6¾in). The entrance hole is near the top of the front and measures 5cm (2in) in diameter. The boxes are constructed from thick plyboard except for the floor base which is made from several layers of fine wire mesh to provide better drainage. An inspection door is included on the left side panel of the nest-box, about 15cm (6in) up from the base to allow easy access for the observation of eggs or chicks. An interior ladder up the front facing panel is also included

in the design of the box. Wood shavings are used exclusively as the nesting medium. A layer of about 10cm (4in) is placed inside the nest-box. The condition of the nesting medium is monitored regularly and changed when required, particularly when chicks are present in the nest-box. In recent years, three different pairs have bred and fledged young in the nest-boxes described. The clutch has always consisted of two eggs and the incubation period is 23 days. Newly-hatched chicks weigh 3-4g, and when parent-raised generally fledge after six weeks.



Roger G. Sweeney

Adult pair with two newly emerged young.

From a hand-reared chick I made the following observations on the chick's development (Sweeney, 1994). The skin is pink and is covered with long grey-white primary natal down. The beak and toe nails are black at the time of hatching. The primary natal down begins to thin out in the second week and is replaced by shorter, denser, secondary down. The eyes begin to slit at around Day 12 and are fully open by Day 16. The first pin feathers which begin to appear are those of the flight feathers which takes place at around Day 24 onwards, followed quickly by pin feathers on the head, tail and then the rest of the body. By Day 40 the chick is close to being fully feathered except for its flanks. By Day 47 the chick is completely feathered, is perching well and feeding itself from a food dish which is held up towards it. The chick was fully weaned within the next week to ten

days. Once fully feathered and weaned the chicks are still visually identifiable as being immature due to their dark iris, black beak and pale grey coloration of the exposed skin of the pre-orbital ring and cere. The beak coloration begins to change towards orange after ten weeks of age onwards, but the dark iris coloration and the lighter grey coloration on the cere and pre-orbital ring remain for two to three months longer,

Artificial Rearing Guidelines

Parent-rearing is preferred for this species at Loro Parque, but hand-rearing has been successfully carried out both at Loro Parque and in the Philippines and the following guidelines have been prepared for the neonatal care of this species.

Incubation

Incubation temperature is maintained at 37.4°C (99.3°F) from the beginning of incubation until the time of internal pipping, from which time the temperature is lowered and maintained at 36.6°C (97.9°F). Humidity is maintained at around 55% for most of the incubation period then raised to 90% or higher once internal pip (or external pip) has been recorded. If eggs are being incubated from an early state, or if candling of the egg indicates an abnormal size of the air sac compared to the relative stage of embryo development, then closer management of egg weight loss can be implemented (Harvey, 1990; Sweeney, 1993). From the beginning of the incubation period until internal pipping has been observed, the eggs should be turned several times each day, but once pipping has taken place the eggs should no longer be turned (Harvey, 1990; Sweeney, 1993). Emergence from the egg should take place within 48 hours of external pipping being recorded.

Hand-rearing

Upon hatching the chicks remain in the hatching incubator for up to five hours to allow them to rest and dry. Once moved to an incubator they are initially maintained at a temperature of 36°C (96.8°F). After the first few days the temperature is slowly lowered by about one degree every two days, although this can vary depending upon the chick's reaction. The chicks are housed in small stainless steel containers which are easy to sterilise. The container is padded with kitchen paper towel for the first two weeks of the chick's rearing period, the towelling being shaped within the container to give support to the chick's body. From two weeks onwards, clean wood shavings are used instead of paper towels. The chick is usually ready to accept its first food around five hours after a normal hatch. The first food normally given to the chick after hatching is simply lactated

ringers solution with a strain of psittacine-specific lactobacillus added. Depending upon the appearance of the chick, as to what degree it appears dehydrated after hatching, the first three or four feeds can also consist simply of lactated ringer solution to ensure the chick is correctly hydrated before normal feeding begins. Once normal feeding begins then the diet fed to the chicks throughout their rearing period is a commercial hand-rearing diet (Pretty Bird). This produce is manufactured with several levels of fat and for *Loriidae* species we always use the formula with 19% protein and 8% fat. The formula is prepared to dilution shown (Table 1). With all the *Loriidae*, once the food has been prepared as shown in Table 1, an additional 2g of Fructosa is added to every 100g of formula to stimulate appetite. The food is always fed at a temperature of 40°C (104°F), although this may cool slightly during the course of feeding. The feeding instrument preferred for *Loriidae* species is always a spoon. In the first few days after hatching, the chick is fed about every 1½ hours between 6.00 am -12.00 pm. As the chick grows and the food becomes thicker, then the time interval between feeds is extended as shown below.

TABLE 1. Food preparation and feeding frequency guidelines for *T. johnstoniae*

Age (in days)	Percentage of solids in food preparation	Number of feeds per day
1	10%	14 +
2	12%	14
3	15%	14
4	18%	12 - 14
5	20%	12 - 14
7 - 14	23%	10 - 12
14 - 21	23%	10
21 - 28	23%	8
28 - 35	23%	6 - 8
35 - 42	23%	4 - 6
42 - 49	23%	2 - 4
49 +	23%	2

From Day 35 onwards the rearing formula starts to have normal nectar food added.

Weaning, as with most *Loriidae*, is straight forward and normally is accomplished without problem in all cases before Day 60. In addition to the dish of nectar being provided inside the cage, segments of fruit such as apple, pear and papaya are also placed at perch height. Once the chick has been identified with a closed leg band, it is always ideal when possible to then house the chick with other closely-related lorikeets of a similar size,

this is particularly advantageous during the weaning period and afterwards. Once the birds are independent it is also good to house them socially for their first six months prior to future pairing decisions being made.

Sexing of Mount Apo Lorikeets

Slight visual indication of sex can be noted in the appearance of the birds, but sexing by DNA blood sample analysis or endoscopy is always recommended. Given the small size of this species, endoscopy is not normally undertaken before the birds are at least six months old.

Future Prospects for the European Population

During the meeting of the Taxon Advisory Group for Psittacines which took place during the 1995 EAZA/EEP convention in Poznan, Poland, the subject of European collection planning for *Loriidae* species was discussed and a proposal was put forward that the Mount Apo Lorikeet should be the subject of a European regional studbook. This proposal was formally supported by the EEP committee later in the same year (Sweeney, 1996). At present the small population which is registered in the studbook is held between three European zoos and a few private keepers. Several other aviculturists are known to keep and breed this species but they have expressed the belief that a studbook for this species is not in their interests. One letter I received from a private breeder complained that the creation of a studbook would mean an eventual decrease in the monetary value of the species, once more surplus birds became available and that the private breeder would encounter problems when trying to sell related stock. This is a very unfortunate side of aviculture, when financial considerations are placed so clearly above the long term welfare of the birds concerned. The breeder who wrote this letter has several breeding pairs and claimed that a studbook was not required because he is breeding the species so well. This same breeder obtained all of his founder stock from the breeding centre of Birds International during a period when only a few bloodlines were breeding in the Philippines. Therefore, the 50 plus young birds that have been bred and sold as pairs from his founder stock are without doubt very closely-related. Some aviculturists have the idea that a studbook is required only when a species does not breed well and that once it begins to breed freely this is no longer required.

For the Mount Apo Lorikeet the opposite is true. All of the founder stock from which the European population has developed has come from one breeding centre, meaning that the founder stock may already be closely related and the prolific breeding from some pairs, whose offspring has since been sold as brother to sister pairs, now means that the genetic base of the European population must be of some concern. The fact that the

species is now breeding well from some pairs does not necessarily mean that the species has a good future in captivity, as a few breeders have bred and sold large numbers of closely related stock, meaning that a studbook is very much required to ensure that the population grows with a balanced genetic base. Anyone keeping the Mount Apo Lorikeet who is not already in contact with me is welcome to get in touch for more details of participation in the studbook.

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Products Mentioned

Lory Select pellet and Hand-rearing diet

Pretty Bird International Ltd., The Mill, Elmsett, Ipswich, Suffolk IP7 6LR, England .

Biotropic Lory Nectar

Biotropic Verlag GmbH, Postfach 68, D-77834 Rheinmünster, Germany.

Fructosa

Ynsadiet, Pº de la Estacion, 15, Getafe, Madrid, Spain.

Lactated Ringers Solution

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BREEDING LESSER GREEN BROADBILLS AT LINCOLN PARK ZOO

by Jill Gossett and Cheryl Beseke

The Lesser Green Broadbill *Calyptrornis viridis* is one of 14 species of the family *Eurylaimidae*. This species was first kept in captivity in 1928 in London. The first captive breeding took place at the Wuppertal Zoological Garden in Germany in 1980 (Webster, 1991). The only other documented successful fledging occurred at the San Diego Zoo in 1993 (Lewins, 1996). Lesser Green Broadbills are found from peninsular Thailand, Malaya and Sumatra to Borneo. Both sexes have stout bodies with short necks and a dense growth of feathers from the cere extending over most of the bill. The males are bright green with black bars on the primaries and secondaries and black dots in front of and behind the eyes. The females are a dull green and lack the black markings.

Lincoln Park Zoo first had broadbills in its collection in 1969. The breeding pair has been together since 2nd June 1994. The renovated Bird House was reopened in 1991 and this particular exhibit design has been conducive to breeding. The exhibit housing this pair measures 30ft x 20ft x 20ft (approx. 9.2m x 6m x 6m) and contains a variety of plants including *Ficus benjamina*, *Ficus allii*, *Ficus elastica*, *Rhapis excelsa*, *Spathiphyllum*, *Philodendron*, and *Epipremnum aureum*. The concrete walls are painted as a deep forest and the front is glass with a thin strip of wire mesh on either side. Skylights on the top of the building provide natural sunlight which is supplemented with halogen lights. There is one door for keeper access and a waterfall with three pools. The exhibit is misted daily. Several other bird species, each a pair with offspring, share this exhibit including four Crested Wood Partridges *Rollulus roulroul*, four Red-legged Honeycreepers *Cyanerpes cyaneus* and three Jambu Fruit Doves *Ptilinopus jambu*.

The broadbills have access to a variety of foods including cooked rice, chunks of banana, grapes, blueberries, orange, papaya, spinach, kale, bird of paradise, gel-based diet¹, peas, corn, soaked dog chow, chopped hard-boiled egg with the shell, waxworms², crickets and mealworms. In October jumbo mealworms were added to the daily diet. There is another special diet for the honeycreepers which the broadbills later showed an interest in. It includes soaked monkey chow, honey, and banana topped with chopped papaya, apple, and orange.

Previous to 1995, stimulation included an artificial, domed nest measuring 5in x 3½in x 4in (12.7cm x 8.9cm x 10.2cm). The female entered it several times but did not lay any eggs. Keepers built a second

nest constructed of cotton mesh in a tear-drop shape with grasses woven through. Dried grasses, fiddleleaf ficus leaves *Ficus lyrata* and *Rhapis excelsa* leaves were offered loose as well as tied in a ball with jute twine to stimulate nest building. In October of 1995 the female began to show interest in dried grasses. The pair was nearly always more active in the early morning, during the mid-afternoon mist, and in the late afternoon. In mid-November the female was seen tapping on the side of the male's bill, though no regurgitation was observed. By December she was becoming more aggressive, perching in new places, and flying to the keeper access door and to the ground. In January new nest material was added including dried Spanish moss, excelsior, strips of brown packing paper, green tissue paper, tan streamers, and green Christmas ribbon. The female's obvious preference was Spanish moss though she did use a lot of the brown paper strips. It was at this time that the pair began to show interest in the honeycreeper diet. In February various palm fibres were added; blond coconut fibres were the most utilized by the pair.

In mid-January the female looked as though she was inviting copulation and the male frequently raised his crest. At various times the male offered jumbo mealworms to her, but the female always rejected them. There was an 'aerial fight' at the end of February that might have been a precursor to copulation. At the end of February, the female was lethargic and non-attentive and she was removed from the exhibit for treatment. The male continued to call and search for her and she was returned to the exhibit on 9th March.

Live Spanish moss was added to the exhibit in mid-March and the female was immediately interested. Though there were various pre-woven nests available, she began building her own on 24th March. The male stood guard on a perch directly in front of the nest before she flew over, and while she added nest material. Initially there were just a few strands of Spanish moss draped over a limb 2ft (61cm) from the ground, against the wall directly opposite the access door. The female always approached the nest the same way. After circular flights at the top of the exhibit, she flew low to the ground across the front of the exhibit, then to the back of the nest (which eventually became the entrance) and finally perched on the top of the nest. She then would climb, while flapping her wings, around the bulk of the nest and weave fibres into it. Eventually rope fibres were offered and the female used them almost as much as the Spanish moss. Because the tail hung to the ground and the Crested Wood Partridges kept becoming entangled, keepers cut it several times before its completion. The female never seemed to mind nest manipulation or cleaning in the area.

In April the female fluttered in front of the male several times, but no attempt at copulation was observed. A crude cavity appeared in the nest and the male stood guard while the female was inside. It was around this

time that the male began to moult. The female continued to add to the nest until the beginning of May when she began a second nest. The second nest was also against the wall opposite the door and was anchored on the stalk of a palm leaf 3ft (91.5cm) off the ground. It was mainly constructed from rope fibre, Spanish moss, and dark, coarse palm fibre. The female created a hole in the second nest by pushing brown packing strips all the way through. Rope fibre was eliminated because the Crested Wood Partridges kept becoming entangled. The brown paper strips were also eliminated because they were not flexible enough.

By the end of May, the female had begun her moult and nest activity ceased. In the beginning of August, both adults' moults were complete. The female's plumage seemed whiter than before, especially in the area of the cloaca. The males plumage, too, was brighter but it was indiscernible if the bars on his wings had changed at all. The female had ripped apart the second nest and finished construction of the first nest. She also began collecting *Ficus allii* leaves and lining the nest with them. Fresh green leaves were offered, but she seemed to prefer the dry leaves. Several days later she was seen in the cavity pulling fibres up to shape the entrance and on 23rd August two eggs were confirmed.

The male was left in the exhibit and guarded both the nest and the female while she was inside, but he never had any active part in nest building or incubation. Throughout incubation, use of the misters was reserved for when the female emerged from the nest because she enjoyed bathing. In fact, she would immediately fly to her normal bathing perch in anticipation of a shower. The male continued to displace and chase her. On 8th September the male was unusually vocal. On 9th September the female was spending more time off the nest and hanging on the edge of the nest entrance with her head inside. On the 10th the female flew out of the nest with an eggshell. Examination of the shell fragment indicated a perfect hatch. It measured approximately 19mm wide.

The female usually fed the chicks before 8.00am and continued at various times throughout the day. She most frequently chose waxworms and papaya followed by mealworms and avocado (the latter had been added to their diets a few days prior to the hatch). The male was not observed feeding the chicks though he did still guard the female and the nest site. On the 16th the female began spending all her time out of the nest and the chicks could be heard begging for food. On the 18th, at 11 days old, the chicks' heads could be seen protruding from the nest when the female fed. The Crested Wood Partridges were removed from the exhibit on the 20th to prevent them from interfering with the chicks. It was noted the broadbill chicks had bluish-green skin and were covered with a small amount of down but no feather tracts were visible. At 20 days, it was observed that the chicks were fully feathered. On the 28th the male was observed next to the nest,

watching and calling. No chicks were visible at the time. At 22 days old, the first chick emerged from the nest. There was concern for the second as the bill was visible but did not seem to move. However, by mid-afternoon it was perched on the rim of the nest entrance and after a few minutes, it fledged. Both chicks' bodies were greyish green with light grey on the underside. Their tail feathers had not yet emerged. Both had yellow beaks with black at the tips.

After the chicks fledged, the male's role expanded and he was observed guarding and feeding the chicks though the female still provided the majority of the chicks' nourishment. The chicks' diet remained approximately the same, mostly waxworms, papaya, mealworms, and avocado though a variety of other fruits and vegetables were offered. On the fifth day after fledging, the female laid a piece of papaya on the perch next to the chick who picked it up and ate it. On 7th October the chicks were obviously more aware than before and the female appeared to be trying to wean them. On 9th October the female was observed at a food dish showing a chick how to pick up food but the female continued to feed the chicks.

The chicks found leaves and sticks irresistible as playthings and were seen drinking from leaves when the misters were turned on. Both chicks enjoyed the mist spray and bathed as enthusiastically as the adults. On 7th October one of the chicks was seen mimicking the 'goik goik' head bobbing call of the adults but no actual vocalization was heard. On the 11th both chicks were observed head bobbing and 'goik goik' calling. Additionally, on 8th October one chick was observed aggressively chasing a Jambu Fruit Dove off a perch.

Throughout October all four were frequently seen perching together and behaving as a family unit. By the end of October the chicks were fully weaned. On 29th October all four were caught and the chicks were banded and blood feather sexed. The chick that was later determined to be female weighed 57.3g. The other chick, a male, weighed 56.9g.

By the end of November both adults began exhibiting signs of aggression toward the chicks and the adult female began showing interest in nest material. In the beginning of December the adult female was observed with grasses and fibres in her beak. She flew from perch to perch beating them against a branch while the juvenile female seemed to mimic her. Subsequently the juvenile female was often observed manipulating nest material. In early January the juvenile female was on the same branch as the nest holding grass strands in her beak. On 10th January 1997, at 123 days, the chicks were taken out of the exhibit. The male weighed 51g and the female 60g.

Throughout the pair's breeding cycle, various vocalizations were heard. Most were produced by the male. The most common was the 'goik goik' call, with or without the head bob. This is done by both the male and

female but the male is usually louder. It seems to be the basic communication, the 'where are you' call. The degree of display or volume seems to change the meaning of this call on occasion. For example, when the female was reintroduced to the exhibit on 9th March, every feather on the male's body was erect, including his crest, and he called loudly. His body was very rigid with extreme excitement. A variation of this call, heard only from the male, includes a 'squeak' between each call when the head bobs back up. There is also the male's ascending 'trill' call, which may be associated with danger or excitement and was frequently heard when the male chased the female during misting. Another vocalization is the soft 'purring' call, similar to the 'trill' but not ascending. Only the male has been heard performing this call. His throat feathers are erect during the 'purr' call, which was performed mostly in the late afternoons after the chicks had fledged. The male also made some unusual vocalizations just after the chicks fledged that had not been heard before or since. He made a high squealing 'caa', almost like a chicken. It was heard when the male was agitated, possibly because the chicks had only recently emerged from the nest. The female made a low, softly pulsating call while she fed. One last call to be noted is the 'tarzan' call, performed only by the males when they were housed without females.

Some of the things we felt were important include:

- 1) Privacy and security for nest site.
- 2) Proper diet. Sufficient insects offered, especially jumbo mealworms.
- 3) Acceptable nesting material including Spanish moss, soft fibres and even fresh grasses.
- 4) Daily misting.
- 5) One of the most important things seemed to be to provide constant stimulation. Any kind of activity or change is a stimulus.

¹Gel-based diet consists of ground extruded, chopped fruits and gelatin.

² Waxworms are kept for three days on a special, nutrient medium.

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EXPERIENCES KEEPING AND BREEDING THE WHITE-FRONTED BEE-EATER *Merops bullockoides* IN THE ZOOLOGICAL GARDEN COLOGNE

by Theo Pagel

Introduction

In one section of the pheasantry in the Zoological Garden Cologne we keep African birds. In one of the combined indoor/outdoor aviaries, made to look like an African riverbank, live White-fronted Bee-eaters *Merops bullockoides*, Baglafaecht Weavers *Ploceus baglafaechi reichenowi* and Egyptian Plovers *Pluvianus aegyptius*.

This article summarizes our experiences keeping and breeding the White-fronted Bee-eater.

General

There are 25 species of bee-eaters. They vary in size from 14cm-35cm (5½in-13¾in) long. Most have colourful plumage and a curved bill. The tail has 12 feathers and in some species the central tail feathers are longer than the others. Bee-eaters live in the warmer regions of the Old World, where most prefer open landscapes. They are mainly insectivorous and catch most of their prey in the air, especially bees. Bee-eaters breed in holes which they excavate themselves. Often you find their nest holes in riverbanks. Some species, such as the Rosy Bee-eater *M. malimbicus*, breed in large colonies of up to 25,000 birds.

Systematics

Bee-eaters are in a family of their own - the *Meropidae*. The White-fronted Bee-eater is a member of the genus *Merops*. There is just the nominate form, which has no known races.

Description

The White-fronted Bee-eater is 21.5cm-23.5cm (8½in -9¼in) long and weighs 31g-35g (Fry and Fry, 1992). Its forehead is dirty white, its crown is mealy and the nape, breast and belly are buff. It has a black mask, a white chin and cheeks, and a silky scarlet throat. Its wings and tail are green, and the vent, under and upper tail-coverts are midnight blue.

Distribution

West Gabon, Zaire and Kenya, south to Okavango, northern Botswana, and Transvaal and Natal, South Africa.

In the wild

Open country, bushland and woodland along rivers are the habitat of the White-fronted Bee-eater. There you can find them at altitudes of up to 2,000m (approx. 6,500ft) (Fry, 1984).

This species breeds in colonies usually of ten to 20 nests. Occasionally you will find colonies of up to 450 birds. Interestingly, about 60% of the breeding pairs have helpers (Emlen, 1981). Helpers are young birds from the previous breeding season but experienced adult birds will also cooperate in rearing the young. There are one to five helpers per nest.

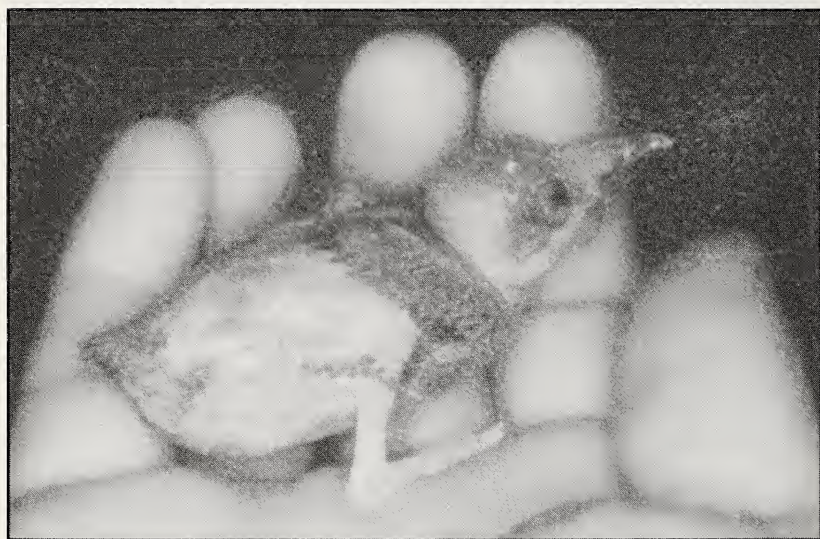


Adult White-fronted Bee-eater

Theo Pagel

White-fronted Bee-eaters are monogamous. They stay together for their lifetime. There is something like a social structure with one to five pairs forming a clan. Only members of the clan are allowed to visit the nest holes. A study of this species at Nakuru, Kenya, revealed that 80-140 nest holes were used by about 62 different clans (Hegner et al., 1982).

The White-fronted Bee-eater breeds in the dry season. The colonies are often found near colonies of (Nubian) Carmine Bee-eaters *M. nubicus*. Nest places are changed yearly. Normally the birds breed only once a year. In Zimbabwe the normal clutch is 2-5 eggs, with the average being 3.23 eggs. In Kenya clutches are smaller (Hegner et al., 1979). The average egg size is 22.7mm x 18.8mm. Copulation occurs several times a day. The incubation period varies from 19-21 days and the nestling period is about 32 days.



Theo Pagel

Chick at seven days old

This bee-eater is insectivorous. We know that about 87.3% of the insects which it catches are *Hymenoptera*. About 50% of them are Honey Bees *Apis mellifera*, 20% are bees of the genus *Trigona* and 17% are other *Hymenoptera*. The other insects are 6% beetles (*Coleoptera*), 5% flies (*Brachycera*) and bugs (*Heteroptera*), as well as moths (*Tineidae*), butterflies (*Lepidoptera*), crickets (*Saltatoria*) and others. White-fronted Bee-eaters have special territories where they hunt. About 50% - 70% of hunting flights are successful.

Keeping and breeding

Bee-eaters are seldom kept. Most of those which are live in zoological gardens and bird parks. There are only a few private aviculturists who keep these birds, maybe because of their biology and specialised feeding habits. In the early days of aviculture the idea of breeding such birds was just a dream. In recent years however there have been articles about keeping and breeding various species, such as the Little Bee-eater *M. pusillus*, European Bee-eater *M. apiaster* and White-throated Bee-eater *M. albicollis*. Lilly Koenig, Winged World (UK), Zoo Cologne, Zoo Krefeld, the Birdpark Metelen (all in Germany) and some private breeders are known to have successfully bred the White-fronted Bee-eater.



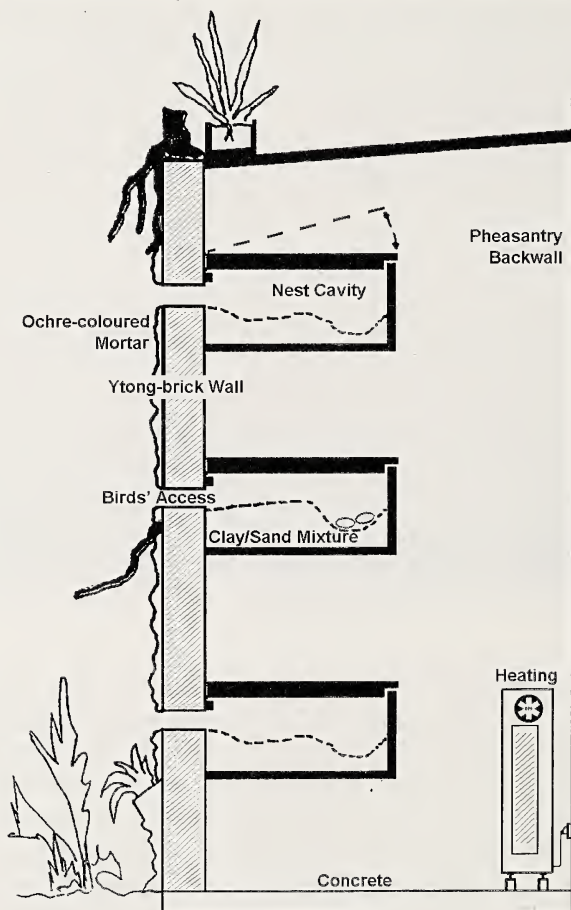
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White-fronted Bee-eaters

The first White-fronted Bee-eaters in captivity were shown in the London Zoo. Later, at the end of the 1960s, there were some in the Zoo Duisburg in Germany. These were caught in southern Kenya by Dr W. Gewalt, former director of Zoo Duisburg. In the last five to seven years various species of African bee-eaters have been imported into Europe quite regularly in more or less small numbers. In 1992, we bought a group of 12 from a well-known dealer. After quarantine the birds were housed in the combined indoor/outdoor aviary. The indoors measures 1.85m x 4.0m x 2.3m (approx. 6ft x 13ft x 7ft 6in) and the outdoors 7.2m x 7.0m x 2.2 - 2.5m (approx. 23ft 5in x 22ft 9in x 7ft 2½in - 8ft 2in). The outdoors section is well

planted. The birds can use it all year round. Only when the temperature falls below -5°C (23°F) do the birds have to remain inside.

On one side of the aviary outdoors there is the artificial riverbank. It is built with a 10cm (4in) thick wall of Ytong-bricks. The front of the wall looks loamy. It is made of mortar which is an ochre colour. In this wall we have holes 5cm (2in) in diameter. Behind these are 11 wooden nest-boxes 20cm x 20cm x 40-55cm deep (approx. 8in x 8in x 15¾in - 21¾in deep). We can open the nest-boxes and control what happens inside. In the first two years we had problems with the material for the nest-boxes. We tried different mixtures of sand and clay. If too much clay is used the sun dries it out so fast and so hard that the birds are unable to burrow into it. Nowadays we form the holes out of pure clay. These are then filled with 2cm-3cm



Cross-section of the artificial riverbank



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White-fronted Bee-eater chicks at 18 days old



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Chick at 24 days old

(approx. $\frac{3}{4}$ in- $1\frac{1}{4}$ in) of sand. At the beginning of the breeding season the entrance holes are closed with a mixture of one part clay and three parts sand. It seems as so the closing of the entrances, combined with warm sunny weather, provide the impulse for the birds to start burrowing and making their nest holes.



Theo Pagel

Artificial riverbank with bee-eater nest holes

We did not know the age of our birds when they were imported nor did we know their sexes.

In 1994 they started to breed in mid-April. Copulation was observed and three pairs laid eggs. To ensure that it was not too cold for the birds (in April and May it can be quite cold at night here) we put a heater in the artificial riverbank. The heater ensured that the temperature never fell below 18°C (64°F). The humidity inside the riverbank was about 65%. The eggs of one clutch measured 22.0mm x 18.5mm, 21.8mm x 18.4mm and 21.6mm x 18.1mm. That year one youngster was reared. The adults fed it with various kinds of livefood such as crickets, mealworms and bees. All livefood is prepared with Korvimin ZVT® (vitamins and minerals). Koenig (1969) wrote that during a nestling period of 32 days the young birds ate about 625-645 insects (275g live weight, 667kcal) per bird. We have observed helpers at the nest as in the wild.

In 1995 two pairs reared four youngsters without any problems. The White-fronted Bee-eaters prefer the high nest holes in our artificial riverbank (55cm-160cm/lft 9¼in-5ft 3in high). In the winter of 1995-1996 we lost two birds. We were unsuccessful in 1996. We found only four eggs in three nest holes and some broken eggs in another hole. We had problems with mice and even with rats. Probably the disturbance caused by these rodents was too great and they may have eaten eggs and young.

It seems as so the food we feed our White-fronted Bee-eaters is the reason for our success in keeping and breeding this species. We offer a choice of different livefoods such as crickets and also bees. In fact we keep a swarm of bees in the aviary. On one side of the exhibit behind some plants is a bee-hive at a height of 1.2m (3ft 11¼in). Beneath this the birds catch all kinds of insects which try to fly through the aviary. We also have different kinds of flowers in the aviary to help attract insects.

The birds have the opportunity to use the inside and outside enclosures all year round. At night there is a red light inside so that the birds can see their way around. Obviously because even in the wild the birds have to endure different - even minus degree temperatures - we have no problems in keeping them as we do indoors and outdoors.

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MY SWAN SONG

by W.D. Cummings

I retired four years ago after 50 years specialising in the breeding and the public display of birds and animals in zoological and botanical gardens. The public display of birds and animals with compatible plant displays has always appealed to me, as not only is it pleasing to the eye but stimulates the interest and health of the inmates. Each display has its own problems though for some inmates can be very destructive.

I have specialised with both temperate and sub-tropical displays both in the UK and overseas. In the early pioneering days of Keston Foreign Bird Farm we concentrated on adapting and breeding rare parrots, parrakeets, pheasants, softbills and a wide variety of seed-eaters, to introduce and supply for aviculture in the British climate. Mutations cropped-up and Keston was the first to start colour breeding the wild Budgerigar *Melopsittacus undulatus* from a blue Budgerigar taken from the wild in Australia, also the blue Ring-neck *Psittacula krameri* from single specimens taken from the wild in India, and the yellow Red-rump *Psephotus haematonotus* and yellow Plum-head *P. cyanocephala*, to name a few.

From these my interest continued after many years of line-breeding the more popular varieties of parrakeets and pheasants, etc., to investigate the fertility and development of other colour varieties. Even before I joined Keston I had in my youth investigated the possible fertility between different species of doves and pigeons. I paired a female Wood Pigeon *Columba palumbus* (reared under domestic pigeons) with a tame male pigeon and produced two hybrid males. Their display when adult was a bow with their smaller tails raised on completion of the display, but both males were infertile. I paired one hybrid to a Stock Dove *C. oenas* and though happily paired it proved infertile. Next I tried pairing a female Stock Dove with a domestic Ice Toy pigeon and the hybrid males were fertile with domestic pigeons but not with the females. My aim was to produce a small Toy pigeon that was not flock imprinted and would adapt to garden conditions. I even brought in wild Rock Dove *C. livia* blood but unfortunately the experiments were halted when I left Keston after one of my partners died.

Also at this time I was experimenting with the fertility of Budgerigars. When doubts were still being expressed about them being a distinctly different species, I paired a big male cobalt budgie to a female Bourke's Parrakeet *Neophema bourkii* and these were isolated together in a small aviary for the winter. When a nest-box was introduced in the spring immediate interest was shown in it and with each other, mating was frequent and several clutches of eggs were laid but all were infertile. I then tried a

female Elegant Grass Parrakeet *N. elegans* with a large male green budgie and the result was the same. At the time it was suggested that the Budgerigar might have been closely related to the lovebirds, so I placed some Peach-faced Lovebird's *Agapornis roseicollis* eggs under budgies with the idea of making it easier for the budgie-reared lovebirds to harmonize and breed back to budgies.

There was a small problem in that lovebird chicks are born with fluff while budgie chicks are naked and several female budgies refused to feed these fluffy youngsters, however, some were reared successfully. One budgie-reared female Peach-faced Lovebird was then paired to its foster-father and although they mated all the eggs were infertile. Although we did contemplate using two of the South American parrotlets *Forpus* spp. with budgies, the parrotlets were hard to come by at the time and the experiments came to an end.

While I was still at Keston a member of the public brought me a small white bird, with a pink bill and eyes, which she had found in her garden. We thought it was a canary which had escaped from somewhere, but it was a little smaller than a Roller Canary and was the wrong shape. Instead of the canary's arched back it had an undulating back with its tail held up. I felt it must be an baby albino House Sparrow *Passer domesticus*, so after caging it for a while and making sure it could feed itself, I released it into a large planted aviary with a variety of other seed-eaters and an immature male sparrow which I had trapped. The albino had to be a female, for to produce a male, a wild female albino sparrow would have to survive to breed and pair to a male either to which she was related or was carrying the albino factor, which is a remote possibility.

The following year the albino female was observed coming from a budgie's wooden nest-box hung right out in the open, a most unlikely place for a timid House Sparrow to breed in. She laid five eggs and hatched and reared all five young, helped by a liberal supply of livefood - but to my horror they proved to be four females and only one male. Females cannot carry the albino factor, as it is sex-linked. Therefore, it could be carried only by her male offspring. Eventually I removed the original male and all the normal females and just left the albino female with her son in a smaller secluded aviary.

Due to some disturbance they missed breeding the following year and in the third year the female was getting a bit old for breeding. She went to nest again and laid only one to two eggs. The first time she reared one male bird (split/albino) and then two albinos (both males). So I thought if I could bring her through another breeding season I could pair her to an albino male and get albinos of both sexes. This was not to be though, for I left Keston soon afterwards. The males moulted out into beautiful little

birds. They were creamy white, with the rufous mantle of the adult male House Sparrow, over the white body - they really were attractive.

I continued with other experiments during my years in South Africa, in zoos, at my own bird farm at Barberton and finally at the Mitchell Park Zoo in Durban, Natal. A friend and colleague had hybridized the African Red-eyed Rock Pigeon (better known outside southern Africa as the Speckled or Triangular-spotted Pigeon) *C. guinea* with domesticated Tiplers in an attempt to discover their relationship to domestic pigeons. He found that some male hybrids were fertile and proceeded to produce very attractive pied Red-eyed Rock Pigeons.

He continually paired the hybrids back to pure Rock Pigeons and found that the pied factor was not lost in pairing back again and again to pure wild stock of the Red-eyed Rock Pigeon and finally he had very attractive pied Red-eyed Rock Pigeons. Eventually whites were produced, they were pure white with the red area surrounding the eyes - they were most attractive. I thought about eventually having a flock of white Red-eyed Rock Pigeons at controlled liberty but we never bred enough of them.

The same colleague in South Africa also bred colour varieties of the Senegal or Laughing Dove *Streptopelia senegalensis* - piers and whites and cinnamons, pied cinnamons, chocolate and white piers and many other very attractive colours - from wild produced mutations. Unfortunately not many aviculturists kept them and they were maintained in only a few collections, because of the high food bills and the fact that they were not highly saleable. Aviculturists preferred instead the more exotic Australian doves and pigeons.

I recollect how years ago, while a pupil at Appleyard Duck and Goose Farm in Suffolk, I was instrumental in initiating the colour varieties of the decoy or bantam duck. In those days there was only the white miniature decoy duck and the black (bottle green) East Indian duck. Among a collection of ducks brought in was a little Khaki Campbell-type cross-bred duck. It was obviously an egg layer and so the idea was conceived of an egg laying bantam duck - a prolific layer of bantam sized eggs. The following year this miniature duck was crossed with a very small white decoy drake and the resultant silver Mallard-type progeny were selectively bred for the small size, decoy boat shape and egg laying qualities, and the silver Mallard colour. Now there are very many beautiful colours available to duck fanciers.

I believe in seeking to expand the variety and quality of life as the aim of the true aviculturist and, I think, that in this respect I have done my bit.

EARLY BREEDINGS AND NEW ARRIVALS AT BIRDWORLD

by Kerry Banks

The year at Birdworld started off on an unusually hectic note, for due to the recent take-over it was a time of major improvements and building work, with plans for extensive refurbishments both in the park and in the shop/restaurant starting almost immediately. Though this was good news for all concerned on the staff, it meant major disruptions for the birds at the start of the breeding season. This combined with some very indecisive weather meant a rather slow start to the season compared with other years, and also the realisation that some of our previously consistent breeding pairs are not going to lay this year. However, we feel that what we are missing in quantity we are making up for in quality, including a couple of first breedings at Birdworld.

The first to make a showing in February were Indian Ring-necked Parrakeets *Psittacula krameri manillensis*, Red-fronted Kakarikis *Cyanoramphus novaeseelandiae*, African Greys *Psittacus erithacus* and Roulroul Partridges *Rollulus roulroul*; all of which have produced successful clutches, with five chicks hand-reared already from the roulrouls. In March, two separate pairs of Waldrapp Ibis *Geronticus eremita* - one of our two Red Data endangered species - went down to nest and now have three almost fully-fledged chicks between them. Our second endangered species, the Bali Starlings *Leucopsar rothschildi*, were also observed treading and though very secretive about nest building, the collection of twigs, feathers and leaves in one of the nest-boxes made us collectively cross our fingers. A clutch of three eggs was laid and we decided to leave them with the parents, and from this point on the nest-box was not approached again until the chicks were due to hatch, as the parents were very nervous sitters, which came off the nest at the slightest disturbance. All three eggs hatched, which was quite an achievement considering it was this pairs' first attempt at breeding. Very infrequent checks were made and the chicks seemed to be doing well, with their parents waiting anxiously every day for their second and third feeds of creepy-crawlies to ply the chicks with. Unfortunately, however, two chicks were thrown out of the box within the space of a couple of days. We do not know why this happened, it may just have been inexperience on the part of the parents. The third chick continued to prosper and, at the time of writing, has fledged and is now a very handsome miniature of its parents, which look as though they are about to nest for a second time.

By now other birds around the park were starting to breed and the first

chicks were beginning to arrive in the rearing room. These included Spree Starlings *Spreo superbus*, Nene Geese *Branta sandvicensis*, Ostrich *Struthio camelus*, Rheas *Rhea americana*, Swinhoe's Pheasants *Lophura swinhoii*, Golden Pheasants *Chrysolophus pictus*, Grey Peacock Pheasants *Polyplectron bicalcaratum*, Rothschild's Peacock Pheasants *P. inopinatum*, White-cheeked Touraco *Tauraco leucotis*, Barn Owls *Tyto alba*, European Eagle Owls *Bubo bubo*, Fulvous-breasted Woodpeckers *Picoides macei*, Demoiselle Cranes *Anthropoides virgo*, Kookaburras *Dacelo novaeguineae* and Humboldt Penguins *Spheniscus humboldti*. Other birds starting to lay included Eider Ducks *Somateria mollissima*, Purple Glossy Starlings *Lamprolornis purpureus*, Amethyst or Violet-backed Starlings *Cinnyricinclus leucogaster*, Wandering Treepies *Dendrocitta vagabunda*, Red-billed Blue Magpies *Urocissa erythrorhyncha*, Shag *Phalacrocorax aristotelis*, Masked or Yellow-wattled Plovers *Vanellus miles*, Spoonbills *Platalea alba*, Lemon-breasted Ground Doves *Gallicolumba tristigmata*, Violet-naped Lories *Eos squamata*, Hoopoe *Upupa epops*, Greater Necklaced Laughing Thrush *Garrulax pectoralis*, Hill Mynahs *Gracula religiosa*, Common Hill Partridge *Arborophila torqueola*, Cheer Pheasants *Catreus wallichii*, Satyr Tragopans *Tragopan satyra*, Blyth's Tragopans *T. blythii*, Temminck's Tragopans *T. temminckii* and Night Herons *Nycticorax nycticorax*.

We also had some disappointments; both Lappet-faced Vulture *Torgos tracheliotus* eggs proved to be infertile and the two Raven *Corvus corax* chicks that we were hand-rearing died of yolk sac infections. Many of our usually reliable pairs of breeding macaws have yet to do anything, due to the fact that they have been shifted around. This, along with elaborate feeding techniques, seems to have helped the Keas *Nestor notabilis* to start breeding again and we are currently hand-rearing a very healthy chick. The Cassowaries *Casuaris casuaris* have also laid again this year. Three eggs have been removed for incubation and two have been left with the parents. We are also very pleased that our pair of Red-crowned Cranes *Grus japonensis* on loan from Moscow Zoo are doing well; one chick is currently being hand-reared, while the parents are on a second clutch of two eggs. Another first for Birdworld is the arrival of two Turkey Vulture *Cathartes aura* chicks which are being hand-reared. After initial panic on our part, these chicks are so far proving to be exceptionally easy to feed, if we can keep them still for long enough. The Turkey Vulture was not in Dave Coles' list of breeding records (*Avicultural Magazine*, 102, 4: 166-168), so it would seem to be the first UK breeding of this species.

As well as some pleasing breeding results, we have also been fortunate to get some interesting new birds. One of our most important projects during the winter was to get the new 'Parrots in Flight' aviary up and

running in time for the arrival of 'Bluebeard', our Hyacinth Macaw *Anodorhynchus hyacinthinus* back from breeding loan at London Zoo, and also to get the various other macaws, amazons, cockatoos and conures installed so that there may be a chance that they will breed there this year. This has been achieved to some extent, as the Scarlet Macaws *Ara macao* and the Patagonian Conures *Cyanoliseus patagonus* are already laying, though the Scarlet Macaws have chosen to lay in an amazon-size nest-box which they can hardly fit in to. The hunt was on to find a mate for 'Bluebeard', when out of the blue some members of the public asked if they could donate their egg-laying female to us? We jumped at the chance and are very, very grateful to them for their kindness.

Other arrivals have included two pairs of Smew *Mergus albellus*, three pairs each of Nene and Red-breasted Geese *B. ruficollis*, three pairs of Blue-bellied Rollers *Coracias cyanogaster* which are already showing signs of wanting to breed, Rufous-crowned Rollers *C. naevia*, Blue-breasted Kingfishers *Halcyon malimbica*, Hardwick's Fruitsuckers *Chloropsis hardwickii*, Long-tailed Broadbills *Psarisomus dalhousiae*, Fairy Bluebirds *Irena puella*, Blue-faced Honeyeaters *Entomyzon cyanotis*, Fire-tufted Barbets *Psilopogon pyrolophus*, Great Barbets *Megalaima virens*, Blue-throated Barbets *M. asiatica*, Bearded Barbets *Lybius dubius*, Royal or Golden-breasted Starlings *Cosmopsarus regius*, Black-naped Orioles *Oriolus chinensis*, Black-capped Lories *Lorius lory* and Stella's Lories *Charmosyna papou goliathina*.

We have also devoted a lot of time and attention to overhauling the birds' diets. Many have been upgraded and changed so that we are sure each species has the correct diet. We hope to make Birdworld one of the premier collections in Europe and, hopefully, with one of the best breeding records.

Kerry Banks is Head Keeper at Birdworld, Holt Pound, Nr. Farnham, Surrey GU10 4LD, England.

LORO PARQUE FOUNDATION TO RETURN ILLIGER'S MACAWS TO BRAZIL

by David Waugh

In a Project for the Reintroduction of the Illiger's Macaw *Ara maracana*, the Loro Parque Foundation (Loro Parque Fundación) is sending 20 Illiger's Macaws to Brazil to be released there later this year in the State of Bahia.

These macaws were bred in captivity in the world's largest parrot collection, which is owned by the foundation and located at Loro Parque in Tenerife, Canary Islands. This important conservation action has several objectives, the most immediate being to determine the effectiveness of this technique to restore viable populations of endangered parrot species to the wild state. The results of such a carefully controlled project will help to determine the best ways to supplement reduced wild populations of parrots, as well as to re-establish populations of parrot species which have disappeared locally or have become extinct in the wild. In regard to the latter, this experimental release of Illiger's Macaws will provide valuable information about how to restore the wild population of the world's rarest parrot species, the Spix's Macaw *Cyanopsitta spixii*.

The Spix's Macaw has only one known individual, a male, remaining in the wild state, although there are 39 registered in the globally managed captive population, two pairs of which are in the Loro Parque Foundation collection. As a founder member of the International Committee for the Recovery of the Spix's Macaw, the foundation collaborates with IBAMA the wildlife agency of the Brazilian Government, and indeed is the principal financial supporter of a recovery programme which involves protection of the wild male bird, protection and restoration of its natural habitat, as well as working closely with the local community for awareness and education about the environment.

Thus, the captive-bred Illiger's Macaws will be released in the native region of the Spix's Macaw, where also exists a wild population of Illiger's, reduced by the effects of the earlier removal of young birds from their nests for illegal trade. The entire process for the eventual release of these birds is being carried out with reference to the guidelines of the Reintroduction Specialist group of the IUCN - the world conservation union. Thus, every individual has undergone the most advanced testing possible for communicable diseases, and has shown negative for all tests. Even so, the birds will have a four month quarantine when they arrive in Brazil, followed by a further six months of acclimatisation at the release site, in a huge aviary specially built and funded by the Loro Parque Foundation. The release protocol also includes genetic and disease testing of the captive-bred birds, as well as individuals of the same species in the recipient wild

population. To enable the project biologists in Brazil to follow the released macaws, identify them and observe their behaviour, each one will carry a miniature transmitter which will allow them to be found by remote means. Each macaw also has a leg-band with a unique number, and a distinct tattoo on the bare skin of the face, harmlessly applied under anaesthesia.



David Waugh

Illiger's Macaw with distinguishing facial tatoo.

A key aspect of this reintroduction is the different history of each macaw which has been bred in captivity. While some were reared by their own parents, others were hand-reared, and also there are age and sex differences within the group to be released. The intention is to correlate any differences in ability to survive in the wild state with the differences of history in captivity. In this way the foundation and collaborators will be able to determine for the future the ideal history of a captive bred macaw, or other species of parrot, for optimum post-release survival in the wild. Although there have been successful and well-documented reintroductions of other kinds of animals to the wild state, the foundation will be responsible for the first properly documented case of this happening with a parrot species.

As a founder member of the Permanent Committee for the Recovery of the Spix's Macaw (CPRAA), the foundation collaborates with IBAMA the wildlife agency of the Brazilian Government, and indeed is the principal financial supporter of a recovery programme which involves protection of the wild male bird, protection and restoration of its natural habitat, as well as working closely with the local community for awareness and education about the environment.

Dr David Waugh is Scientific Director of the Loro Parque Fundación, 38400 Puerto de la Cruz, Tenerife, Canary Islands, Spain.

THE PALM COCKATOO EUROPEAN ENDANGERED SPECIES BREEDING PROGRAMME (EEP)

by Roger Wilkinson

The Palm Cockatoo *Probosciger aterrimus* is one of the most charismatic of all the larger parrots. Huge, black and crested with flaming red cheek patches, scarce in aviculture, expensive and with a reputation of being difficult to breed, it is many parrot keepers' dream bird.

Sadly for the Palm Cockatoo, never abundant in the wild, its desirability both as an avicultural subject and as a 'status symbol' pet parrot led to an insurmountable level of trade. This trade led to it being listed in 1975 on Appendix II of the Convention of International Trade in Endangered Species. This trade was then occurring despite local protection of Palm Cockatoos in their native range in Papua New Guinea, Indonesia and the Cape York Peninsula in Australia. Trade became so significant over the next few years that Palm Cockatoos were transferred to CITES Appendix I in 1987. Before that time Palm Cockatoos were still being exported in large numbers especially from Indonesia. Palm Cockatoos are currently listed as near-threatened in *Birds to Watch 2*, the world list of threatened birds published by Birdlife International.

Three races of Palm Cockatoos are currently recognised. The nominate *Probosciger aterrimus aterrimus* occurs on the Aru Islands, Indonesia, Misool, southern New Guinea and Cape York. This form is by far the commonest in captivity and because of its limited range and the fact that it has been subjected to the greatest persecution for trade, may also be the most threatened. The huge and magnificent *Probosciger aterrimus goliath* originates from the western Papua Islands (except Misool) and southern forests of Irian Jaya. Because of both their scarcity and size these are held to be the most desirable by many aviculturists. The third recognised race *Probosciger aterrimus stenolophus* comes from Yapen Island, Irian Jaya and northern New Guinea and is of similar size to *goliath* but differs in its narrow crest feathers. I am unfamiliar with this form in captivity and know it only from museum specimens.

Other forms previously described, but not currently, generally recognised, include *Probosciger aterrimus alecto* and *Probosciger aterrimus intermedius*. Molecular DNA studies conducted by George Amato at the New York Zoological Society suggest that the isolated Cape York population may be distinct from the other populations but still need to go some way further to determine the validity of other races. Although the largest *goliath* appear clearly different from the smallest *aterrimus*, intermediate sized captive birds are unassignable where, as is almost always the case, their

geographical origin is unknown.

The present European Endangered Species Programme (EEP) for Palm Cockatoos was developed from a UK Zoo Federation Joint Management of Species Programme (JMSP) first proposed in 1985. This initially was restricted to a small set of zoos within the UK and was later expanded to include other zoos and private keepers. The first Regional Studbook for the British Isles was published in 1989 and included an historical listing of



Roger Wilkinson

Palm Cockatoo

49 birds. The total of 36 living birds then included 15 shared between seven participating zoos and 21 in three private collections. The bulk of these birds were located at one single private collection and only one was captive bred. A second British Isles Studbook was published in 1991 and following the approval of an EEP (European Endangered species breeding Programme) for Palm Cockatoos, the first European Studbook was published in 1993 with subsequent editions in 1994, 1995 and 1996. The latest studbook includes an historical listing of 229 birds and a current listing of 100 living birds held by 25 zoos and four private collections. The difference between the historical listing and the current lists in part reflects the fact that some collections initially registered with the JMSP declined to join the

EEP or have been lost to the follow up. It also sadly results from considerable mortality in captive Palm Cockatoos. Historical data for the Palm Cockatoo indicates 83 deaths in the period 1960-1995. This compares to 37 hatchings in the same period. In every year since the inception of the EEP programme, deaths have outnumbered hatchings. Unless this trend can be reversed there is no future for the EEP population of Palm Cockatoos. Some individual collections both within the EEP and outside it are having more success than others in keeping and breeding Palm Cockatoos. It is important that this expertise is shared. We must be able to identify what factors may be associated with successful breeding and with mortality so that both sides of the problem can be fully addressed. Cathy King of Rotterdam Zoo is currently preparing a questionnaire to be circulated to all holders with the aim of producing husbandry guidelines for Palm Cockatoos.

Credit must be given to Leipzig Zoo for their success in breeding Palm Cockatoos over the period 1981 to 1990. Other collections hatching chicks within the EEP include Rotterdam Zoo, Palmitos Park, Loro Parque, Paradise Park (Hayle) and most recently Tierpark Berlin. Sadly, Leipzig Zoo's breeding history was abruptly terminated by the theft of Palm Cockatoos from their collection. Theft is a major concern for all parrot keepers, and with Palm Cockatoos security is paramount. Over the three year period 1991 to 1993, ten Palm Cockatoos were stolen from three collections. Increased security measures recommended include more efficient alarm systems and more secure accommodation. Additionally, it is recommended that all Palm Cockatoos are microchipped. This not only deters thefts but also allows confident recognition of individual birds if stolen birds are later recovered.

Palm Cockatoos still appear in illegal trade. These may be birds stolen from other collections or stolen from the wild. Sensible control measures necessary to terminate this illegal trade should be supported even though these may inconvenience ourselves as honest and committed parrot keepers. If we want to ensure that Palm Cockatoos will continue to be enjoyed at zoos and in private aviculture then we must try to work together sharing our knowledge and resources. If you have Palm Cockatoos and would like to join the Palm Cockatoo EEP then please contact me :- Dr Roger Wilkinson, Coordinator Palm Cockatoo EEP, North of England Zoological Society, Chester Zoo, Upton by Chester CH2 1LH, England.

BOOK REVIEWS

Handbook of the Birds of the World

Although Volume 3 of the remarkable *Handbook of the Birds of the World* deals with a spectrum of families that starts with the Hoatzin and ends with the Auks, there is much in between that is of interest and value to both private and professional aviculturists - button quail, cranes, Sun Bittern, seriemas, various waders and much more. Like its predecessors, the third volume sets the highest standards with impeccable text, excellent plates by leading artists (Norman Arlott, Hilary Burn, Angels Jutglar, Francesc Jutglar, Ian Lewington, Chris Rose, Lluís Sanz, Etal Vilaro and Ian Willis), and a selection of colour photographs that really do have to be seen to be properly appreciated; as with Volumes 1 and 2, most of them illustrate bird behaviour rather than simply being portraits of individual species. An added bonus is a superb frontispiece of cliff-nesting seabirds in the Pribilof Islands, specially painted by Robert Bateman who has also contributed a thoughtful Foreword. More than 30 authors are also listed for the volume.

The book's vital statistics are, as usual, awesome. Volume 3 runs to 752 pages (each 310mm x 240mm/12¼in x 9½in), has 577 distribution maps, 389 colour photographs, 60 full page plates and 8,000 bibliographical references. It almost goes without saying that production and printing are of the very highest quality and, despite their weight, these are not volumes that are likely to disintegrate - even though their value as reference works guarantees that they will have a full and active life.

The text, although succinct, is informative and easy to follow. Subject headings are: Taxonomy, Distribution (brief information with accompanying maps for all species), Descriptive Notes, Habitat, Food and Feeding, Breeding, Movements, Status and Conservation, and Bibliography. Introductions to families, in most instances occupy several pages, and are extremely informative under such headings as Systematics, Morphological Aspects, Habitat, General Habits, Voice, Food and Feeding, Breeding, Movements, Relationship with Man, Status and Conservation.

This is the third volume this particular reviewer has dealt with and I find it remarkable that I have yet to find an aspect that demands critical comment. Putting aside its value as a reference work, there is a great deal about the photographic content of Volume 3 to admire. The first photographs to be encountered - several stunning shots of Hoatzin - effectively set the standard for what follows. The photographs of cranes are outstanding and others to take the eye include those of the Kagu, Sun Bittern, various bustards and waders of all kinds including the Ibisbill.

The publishers, Lynx Edicions tell me they now have a 45-page web on the Internet; possibly the first web exclusively dedicated to one birdbook. Their URL address is :- <http://www.hbw.com> . By browsing the web pages you can see and print several sample plates, colour photographs, texts and maps of Volumes 1, 2 and 3.

The Handbook of the Birds of the World (Volume 3) is published by Lynx Edicions, Passeig de Gracia, 12, E-08007 Barcelona, Spain and costs £105 (plus £6.00 postage and packing). It is available direct from the publishers or from booksellers.

A lot of money? Yes, but in exchange there is an awful lot of book. It is fair to say there has never been anything quite like the first three volumes...that have clearly left many reviewers searching for superlatives. Despite the cost, if you can afford it, buy it. It is an investment you will not regret.

Frank Woolham

Birds of Southern Mozambique

With peace having returned to Mozambique, African Bird Book Publishing judged this an opportune time to publish *Birds of Southern Mozambique* by Phillip A. Clancey, D.Sc. It is a retitled, revised and updated 386-page paperback edition of the same author's earlier work titled *A Handguide to the Birds of Southern Mocambique*, published in the 1970s, which has for many years been unavailable.

Over 650 species occur in southern Mozambique (the area south of the Zambezi) and the bulk of the book consists of an account (though not a description) of each of these and any races which occur there. Each species is listed under its scientific and English/South African names, and each race is dealt with separately. The account includes reference to the status of each species and race, the most important locality records and their authors' names where appropriate. There are also 39 maps showing the known ranges of a number of species and races. The ecology of each species and race is touched upon, and most accounts conclude by referring to the known breeding season of the bird in southern Mozambique and/or a close-by area.

The author, also an accomplished artist, painted the 48 colour plates, plus the cover illustration showing the Purple-crested and Livingstone's Touracos. The majority of plates show just a single species, the others show two, all of them in naturalistic settings. Those portrayed include such familiar species as the Jackass Penguin, Black and Saddle-billed Storks, Sacred Ibis and Egyptian Goose, as well as unusual ones such as Rudd's Apalis, Roberts' Prinia, Neergaard's Sunbird, the Pink-throated Twinspot

and Lemon-breasted Canary, which are confined mainly to southern Mozambique, with just a slight overlap into adjacent territories.

As so few birds are illustrated and there are no descriptions of them, this book cannot really be used as a field guide or for other identification purposes, except in conjunction with Ian Sinclair's *Field Guide to the Birds of Southern Africa*, Roberts' *Birds of South Africa* or one of the other South African guides. It is obviously a very well researched, scholarly work, which so long as you do not want to use it for identification purposes, will provide you with most if not all of the other information that you are likely to want to know about the birds and ornithological history of southern Mozambique.

It is available from Natural History Book Service Ltd., 2-3 Wills Road, Totnes, Devon TQ9 5XN, UK. Tel:01803-865913 (International: +44-1803-865913)/Fax:01803-865280 (International:+44-1803-865280/E-mail: nhbs@nhbs.co.uk.

Malcolm Ellis

Avian Husbandry Notes for the Pictorella Mannikin

Heteromunia pectoralis by David Pace.

Published by the Conservation Committee of the
Aviculture Federation of Australia.

This 44-page booklet (illustrated with black and white drawings) published in March 1997 is the second in a series of husbandry manuals (the first being on the Luzon Bleeding-Heart Pigeon *Gallicolumba l. luzonica*)

In the Introduction (pp 3-4), the author mentions that the manual has been developed in an attempt to provide the avicultural community with some guidelines to the keeping and successful breeding of the Pictorella Mannikin. It is also mentioned that 'the information contained is primary based upon literature published in popular avicultural texts and journals dating back to the 1950's.' This is not strictly true as three of the publications quoted from are in fact either ornithological reference books and/or general Australian (wild) bird books.

The author also mentions that certain information between different aviculturists is often conflicting, thus illustrating the point that there should never be only one way of achieving success in the breeding of birds, and because of this information contained in the manual should not be deemed as definitive.

As will be seen from the title of the booklet, the scientific name given to the Pictorella Mannikin differs from the one usually associated with this species in that '*Heteromunia*' is used rather than '*Lonchura*'. The former

is as per Sibley & Monroe (1990), *Distribution and Taxonomy of Birds of the World* and Rowland (1996), in *Finches, Bowerbirds and Other Passerines of Australia*. However, the use of scientific names is not consistent with either publication as the Diamond Firetail is given the scientific name *Emblema guttata*, whereas Rowland suggests *Stagonopleura guttatum*.

Pages 7-11 of the booklet give details of the Pictorella in the wild. It appears that as with the Gouldian Finch (Rowland suggests *Erythrura* rather than the more often used *Chloebia gouldiae*), the Pictorella is susceptible to air-sac mite infestations and it is estimated that 62% of the wild population is affected.

Pages 12-38 deal with captive husbandry, including health requirements, behaviour, diet, and breeding. Unfortunately, only references to captive care under Australian conditions are discussed. Indeed the author does not refer to writings outside of Australia at all. This, to my mind, limits the usefulness of the booklet to enthusiasts worldwide, as few (especially in the UK and Europe as a whole) are able to emulate the conditions used by Australian aviculturists.

A problem which can often occur when an author collates material from different sources, is that incorrect information can be continually passed on. The author (pp 8 and 21) states that the Pictorella is the only Australian finch which does not allopreen. This observation, which is incorrect, was taken from the *Finch Breeders Handbook*, Volume 1, The Australians, published in 1987 by the Queensland Finch Society. Both the Painted Firetail *Emblema pictum* and the Gouldian Finch are also non-contact birds.

The author mentions that he aims to supplement and revise the booklet in the future, perhaps he will rectify the above incorrect information and, what is more important to enthusiasts outside of Australia, also give details of captive-breeding procedure elsewhere in the world.

Anthony J. Mobbs

The booklet is available from the Conservation Committee of the Avicultural Federation of Australia, 37 Merrill Street, Mulgrave, Victoria 3170, Australia. Tel:(03) 9547.2415/Fax:(03) 9546.0877/ e-mail:martim@ozemail.com.au. It costs A\$11.00 in Australia and A\$13.00 by airmail abroad. Payment by overseas purchasers should be by bank draft or money order, or by Visa or Mastercard, making sure to include your card number, expiry date, name and signature.

International Aviculturists' Society Proceedings

The International Aviculturists' Society, based in the USA, holds a convention annually in Florida. It is mainly parrot orientated. These conventions have come to be regarded as the finest of their kind. For the benefit of those unable to attend - and because it is impossible to remember all one has heard there - the published *Proceedings* are offered for sale in ring binders. Some of the world's leading breeders and vets gathered for the meeting held last January and their collective wisdom is of enormous practical value. Parrot aviculture, also the care of pet birds, are the main themes. From the pages of the *Proceedings* one can pick up numerous hints. John Goss of Florida (originally from the UK) mentioned that he changes the hoses used for cleaning his cages and buildings twice annually. This is because bacterial growth can build up to a dangerous level inside a hose in a location where the humidity is high. He gave another useful tip. To save time in washing and disinfecting containers used for parrot chicks being hand-reared, he places them in cardboard gift boxes of various sizes. They are discarded after use. In Florida exists one of the world's largest parrot breeding facilities - Avicultural Breeding and Research Center (ABRC). Two members of its staff, veterinarian April Romagnano and Curator, Trent Swigert, spoke at the meeting. April Romagnano gave the answers to questions which are frequently asked about artificial incubation. Causes of early embryonic death include improper egg handling, excess or insufficient heat or humidity, excessive vibrations, improper egg turning or poor ventilation. A healthy developing parrot egg should lose 15% to 17% of its water weight by diffusion during incubation. Malposition and inadequate moisture loss are among the most common causes of embryo mortality. In 1996 over 1,100 chicks of 45 species (mostly Psittacines) were hatched at ABRC. Many of the breeding birds were reared in the collection. One of the most valuable items in the *Proceedings* is a table showing the year of hatching of first generation offspring and the year in which the female first laid (or the male was productive). For example, females laid at the following ages: two Bare-eyeds laid first at three years, Lesser Sulphur-crested Cockatoos at four and five years, Roseate Cockatoos at three, three, four, four, five and eight years, two Red-tailed Black Cockatoos at four years, Eclectus (*vosmaeri*) at two, three and five years and Blue and Yellow Macaws at four, four, five, six, six and seven years. Veterinarian Fern Van Sant, in a paper on zinc and parrots, warned of the dangers of powder-coated cages. Most powder-coatings do not contain zinc but some do to give a harder finish. This is, of course, poisonous to parrots. Feather plucking can result when birds ingest zinc.

The *Proceedings* cost £20 plus £10 postage to the UK, from Luanne Porter, IAS, PO Box 2232, LaBelle, Florida 33975, USA, (Fax: 001 941 675 8824.)

NEWS & VIEWS

RARE VIETNAMESE PHEASANT BRED IN THE UK

The rare Vietnamese Pheasant *Lophura hatinensis* from the lowland forests of Vietnam has been bred for the first time in the UK. Discovered in 1965 by Professor Dang and described in 1975 by Professor Vo Quyr, it was first bred in captivity in 1993 at Hanoi Zoo. The UK birds were sent from there on loan to the World Pheasant Trust, and are kept at a member's aviaries in the south of England, where the first chick of this species ever hatched outside of Vietnam chipped its way out of the egg on 20th February 1997. There are three closely related rare pheasants in Vietnam which are currently the subject of research by the World Pheasant Association, Birdlife International and the WWF. These are Edwards's Pheasant *L. edwardsi*, the Imperial Pheasant *L. imperialis* and the Vietnamese Pheasant. The first two were first brought into captivity in 1924 by the late Jean Delacour. From this initial import some 800 or more Edwards's Pheasants are living in captivity today. The species was thought to be extinct in the wild, but in recent months five have been trapped by local people.

* * *

EAGLE OWL THREATENED

In 1996, visitors to Paignton Zoo, south Devon, donated £1,171 (roughly US\$ 1,800) towards the cost of employing a research worker to assess the status of the Philippine Eagle Owl *Pseudopteryx philippensis*, thought to be among several threatened owls in the Philippine Islands.

* * *

RARE PARROTS IN PRAGUE

Cage & Aviary Birds (28th December 1996) referred to a report in a German bird-keeping magazine about the breeding of the Blue-headed Macaw *Ara couloni* in the Czech Republic. In the first instance the female laid four eggs, of which one hatched and the chick was removed and hand-reared. Also during 1996, a pair belonging to another breeder laid two fertile eggs, which hatched but the chicks died a few days later. Later the same female laid a second clutch from which it was believed the young were reared successfully. A later issue of *Cage & Aviary Birds* (25th January 1997) included a colour photo of a hand-reared young Blue-headed Macaw in the Czech Republic. Fred Wright, a regular contributor to the magazine saw eight pairs there, three St Vincent Parrots *Amazona guildingii*, some Palm Cockatoos *Probosciger aterrimus* - he was told that there are between 20-30 kept in the Prague area - and saw 15 or more Queen of Bavaria or Golden Conures *Aratinga guarouba*. All four species are thought to be being bred there.

PRESTIGIOUS MEDAL FOR HIS WORK WITH PENGUINS

Frank S. Todd was a recent recipient of the Zoological Society of San Diego's prestigious Conservation Medal for his work with penguins. A prolific writer with more than 90 scientific and popular articles, and three books to his credit, he has during his career also won numerous awards for avian propagation, exhibit design and scientific research.

He became Curator of Sea World in San Diego in 1972 and by mid-1988 had 1,300 penguins of nine species, three of these species self-sustaining populations, in Seaworld's four facilities. In addition to his successes with penguins and waterfowl, Frank Todd developed the most productive flock of captive Caribbean Flamingos *Phoenicopterus ruber ruber* in the world and established the first breeding colony of Lesser Flamingos *Phoeniconaias minor*. Among other firsts in his career are the breeding of the Crimson-rumped Toucanet *Aulacorhynchus haematopygus* (the first toucan bred in the New World), Harpy Eagle *Harpia harpyja*, Great Tinamou *Tinamus major*, Atlantic Puffin *Fratercula arctica*, Chinstrap Penguin *Pygoscelis antarctica* and Blue-eyed Shag *Phalacrocorax atriceps*. While he was Curator of Birds at Los Angeles Zoo (1965-1972) he raised 'Topa Topa', the only California Condor *Gymnogyps californianus* in captivity at that time

Zoonooz

* * *

FIRST CAPTIVE-BRED CAPE VULTURE

The world's first parent-reared captive-bred Cape Vulture *Gyps coprotheres* has been bred at the Vulture Study Group's De Wildt Captive Unit in South Africa. The 17 year old male incubated the egg for 54 days. His mate is an old female severely crippled with metabolic bone disease. His previous two partners laid infertile eggs. The young vulture will eventually be released into the wild. The Vulture Study Group is anxious to obtain Egyptian Vultures *Neophron percnopterus* for a captive-breeding project for a re-introduction programme. Its address is:- Vulture Study Group, Endangered Wildlife Trust, P.O. Box 72334, Parkview 2122, South Africa. (Tel: (011) 646-8617/Fax: (011) 486-1506).

* * *

MAGPIE AND SONGBIRD NUMBERS

Magpie *Pica pica* numbers in farmland and woodland areas of Britain have more than trebled since 1964. The increase on arable farmland is less and magpies are found there in lower densities than on mixed and grazed farmland. The decline in songbirds however has been most marked on arable farmland, where the magpies are in their lowest numbers. This suggests that the magpie may not be the only factor affecting songbird numbers as has been suggested.

A TALE OF TWO HUMMINGBIRDS

The Juan Fernandez Firecrown *Sephanoides fernandensis*, a little known hummingbird could, according to *Fauna & Flora News*, become extinct by the year 2000, if its current rate of decline continues and no conservation measures are taken. Only 250 remain on just one seriously degraded island in the Juan Fernandez Archipelago, Chile. Its main hope of survival rests with a joint British, Austrian and Chilean team which is visiting the island to collect biological and ecological data to help formulate appropriate conservation measures. In *Cage & Aviary Birds* (11th January 1997), Kevin Casey described breeding the Purple-collared Woodstar *Myrtis fanny*. Four young, two in each brood, were raised successfully in the UK during 1996.

* * *

HOOPOE BREEDING PROJECT

Hoopoes *Upupa epops* bred at Harewood Bird Garden near Leeds, Yorkshire between 1991 - 1994 are now represented in a number of UK collections, both public and private. But while the population grew steadily over the period, during the last two years it declined and now numbers nine males and 11 females distributed between Harewood, Leeds Castle (Kent), Paradise Park (Cornwall), Paignton Zoo (Devon) and Birdworld (Surrey). Harewood's Curator, Jim Irwin-Davis and Research Assistant, Gavin Sweet have been attempting to co-ordinate details of breeding activity among birds in these collections and their efforts have now resulted in the publication of a preliminary studbook for the species in Britain. Details from 1991 are included and they account for 107 birds in 13 collections, including six founders.

All males have now been paired and it is hoped the downward trend may be reversed this year. An early report from Leeds Castle stated that one of its pairs had a large clutch of eggs. The database is maintained on SPARKS and efforts are being made to ensure that no further genetic diversity is lost from this small population. It is obvious that fresh bloodlines are needed to improve existing UK stocks and increase the number of birds to a point where it will be possible to manage a sustainable captive population. Aviculturists who keep Hoopoes are invited to contact Gavin Sweet at Harewood:-Tel:0113 2886238.

* * *

SKYLARKS FLOCK TO MARTIN MERE

Earlier this year on the 15th February, no fewer than 400 Skylarks *Alauda arvensis* were recorded at the Wildfowl and Wetland Trust's Martin Mere Centre in Lancashire. A few days later, wardens counted more than 70 Tree Sparrows *Passer montanus*, 75 Greenfinches *Carduelis chloris*, 80 Goldfinches *C. carduelis* and 85 Chaffinches *Fringilla coelebs*.

A NEW GUIDE TO GRASSFINCHES

A Guide to...Australian Grassfinches, Their Management, Care & Breeding by Russell Kingston, is the latest in a series of guides (*A Guide to Pigeons, Doves & Quail* was reviewed in the *Avicultural Magazine*, 102, 2: 89) published by Australian Birdkeeper Publications. This latest guide costs A\$23.95, plus A\$3.00 post and handling in Australia, and A\$7.50 p & h by airmail overseas. Details are available from:- Australian Birdkeeper Publications, P.O. Box 6288, Tweed Heads South, NSW. 2486, Australia. Tel: 07 5590 7777/Fax: 07 5590 7130/E-mail: birdkeeper@birdkeeper.com.au/Internet:<http://www.birdkeeper.com.au>.

* * *

UNUSUAL NEST SITES

Contractors stopped work on a new signal mast on Stafford Station, because it would have meant disturbing a Mallard duck *Anas platyrhynchos* sitting on its nest containing six eggs. Because of this the mast was moved a short distance away so as not to disturb the sitting bird and to allow work to continue on the £2 million upgrading of the Royal Mail depot at Stafford, adjacent to the main railway lines to and from London and Scotland.

A pair of Ravens *Corvus corax* hatched three young in a nest on Chester Cathedral. A closed-circuit television camera provided close-up views of the nest via screens in the cathedral and the local Tourist Information Centre. Last year the pair nested on a ledge on Chester's Town Hall, opposite the cathedral.

The item about the Ravens came from Frank Woolham, and the item about the duck came from the *Staffordshire Sentinel*, and was sent by Robert Callaghan.

* * *

A PERFECT PAINT JOB?

Rosemary Low has written and pointed out that painting birds is not always an innocent pastime. According to a report in *Australian Aviculture*, it resulted in a three year jail sentence for a Perth bird keeper. He painted some Indian Ring-necks *Psittacula krameri* with coloured dye so that they resembled the sought-after cinnamon mutation. A Perth bird dealer paid A\$28,000 for three pairs. A Queensland bird breeder then bought a pair for A\$13,000. When the bogus breeder of the mutation tried to sell a fourth pair, an associate informed the police about his fraudulent activities. A closer inspection of the dyed birds revealed a 'perfect paint job' except for one feather under one wing of one of the parrakeets.

PIETER DUIJZEND 1912 - 1996

Pieter Cornelis Christoffel Duijzend was born 17th July 1912 in Rotterdam, Holland. His father Wessel Cornelis Duijzend had chosen to settle in Rotterdam because his business involved ornamental and exotic animals. The major part of the business was with the great zoos of Europe, including those at Hamburg, Basel and Milan. Pieter was his father's only son and accompanied him when boats landed animals from Asia and Africa. Many of these were quarantined in the former 'Old Zoo of Rotterdam'. Pieter's mother had a shop where she sold small tropical birds, reptiles and animal foods.

Pieter chose to specialise in game and ornamental pheasants and waterfowl. In 1930 he had a house built in Zeist, where in the surrounding grounds he had dug several ponds in order to breed waterfowl. In 1937 his pheasant aviaries extended for 125m (approx.410ft). He possessed 15 species, among them *Lophura* and *Syrnaticus* spp., as well as *Phasianus colchicus*, *P. c. torquatus* and *P. versicolor*. He also published his first book (in Dutch) *The Keeping and Breeding of Pheasants*. Before World War II he also kept 70 species of ducks and six different swans. After the war some 40 ducks remained.

Pieter wrote articles for the Dutch magazine *Avicultura*, and was acquainted with Jean Delacour. The Marquis of Tavistock and Jean Delacour visited Pieter and his father at Zeist. The firm of W.C. Duijzend existed until 1970, just five years short of its hundredth anniversary. Pieter's grandfather, who died in 1907, started out selling canaries and practised taxidermy at the University of Groningen. From 1977-1983 Pieter assisted his daughter in setting up a new ornamental garden near Amersfoort.

The following item appeared in *News & Views*, Vol.81, No.4, p. 231, 1975:-

'Mr P. Duijzend, a member of the Society since 1927, writes from Leersum, Holland, to say that a female South African Shelduck *Tadorna cana* which he acquired in 1928 died in June this year. It was one of 15 which his father imported from Pretoria; some were sent to Cleres and the rest kept by Mr. Duijzend and successfully bred from. This original female survived the war and other vicissitudes including blindness in her old age and Mr. Duijzend wonders whether 47 years is a longevity record for this species'.

Just as the magazine was about to be printed, came the sad news of the death of Pieter Duijzend's widow, Fredrika Jacoba Duijzend-van Baarle. The Avicultural Society offers its condolences to their daughter Nannette Dijkdrenth-Duijzend.

Cardinals, Saltators & Grosbeaks Seedeaters, Seed-finches & Grassquits

Robin Restall, author and illustrator of the recently published *Munias and Mannikins*, reviewed in this magazine, is now working on two new books, also to be published by Pica Press in the UK and Yale University Press in the USA. The first will cover the New World sub-family Cardinalinae, that is the cardinals, saltators, grosbeaks and *Passerina* buntings. The second will cover a group of New World emberizids, *Sporophila*, *Oryzoborus*, *Catamenia*, *Tiaris*, *Loxigilla* and *Loxipasser*. These handbooks will contain as much original personal observations (written and illustrated) as possible, and, like the munias book will show every known plumage in colour. This means adult males of every race, and females, immatures and moults where distinct. There will also be a set of measured drawings of many individual birds. The distribution maps will show political boundaries, major river systems and probably key elevations.

Robin lives in Caracas where he has a large garden aviary and a small outdoor birdroom. He has a few *Sporophila* and *Oryzoborus* at the present, and is travelling extensively to make comparative field observations about these birds, many of which occur in Venezuela.

He would very much like to build a network of people interested in any of the species that are in the two groups described above, to exchange experiences, news and views. If you have seen *Munias* and *Mannikins*, you will understand how avicultural experience can provide invaluable insights into behaviour, and thus contribute to and enrich a handbook on birds. Every correspondent will be respected, and every contribution will be fully acknowledged in the printed work. Any aviculturist who corresponded with Robin during the development of the munias book will vouch for the fact that this is a give and take offer.

Robin Restall can be contacted by mail %Aerocav 1330, P.O.Box 025304, Miami, FL 33102- 5304, USA. Fax: 58(2) 976 0152 e-mail: robirest897@cantv.net

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The President's Garden Party will take place Sunday, 22nd June 1997.

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THE AVICULTURAL SOCIETY

The Avicultural Society was founded in 1894 for the study of British and foreign birds in freedom and captivity. The Society is international in character, having members throughout the world.

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TWENTY-FIVE YEARS AT COBHAM

by R.C.J. Sawyer

Last year (1996) marked a quarter of a century during which Ruth Ezra, President of the Avicultural Society, and I have enjoyed keeping our joint collection here at Chestnut Lodge, Cobham, Surrey. Numerous breedings have taken place, including 14 which are believed to be UK first breedings, along with several UK second breedings and numerous others. Of the many families, it is the waders with which we have been the most successful. Several have been sustained breedings over many years. Possibly our best year so far was 1992.

These notes aim to provide as much information as possible, although unfortunately in the case of several of the smaller birds it is difficult to write a great deal about the breedings as the nests were sometimes too small to observe or we thought it best to leave the birds alone and not disturb them. I have separated the feeding and describe it before the breeding as generally in the large flights the birds have a variety of foods available and will take a selection of those offered.

With regard to the aviaries, these notes are best read in conjunction with those that appeared in the *Avicultural Magazine*, 101, 4: 187-191, covering my talk at the Centenary Celebrations, which was illustrated with a selection of slides. The aviaries here at Cobham are of many shapes and sizes, and of various heights. They are generally landscaped and planted to blend in with various trees and plants etc. One problem has been that the growth is at times very vigorous and nowadays the vegetation has to be pruned back otherwise it would be difficult to see the birds. Subtle alterations have been made to some of the flights but basically they have remained unaltered since they were constructed. The present lay-out took about 20 years to complete. At all times the birds come first and all are encouraged to breed.

Correct feeding is a vital part of breeding. Being in mixed aviaries with a large variety of foods available means that many of the birds have the chance to sample a wider variety of foods than otherwise might be available to them. Most aviaries have a supply of nectar and in some aviaries

there is more than one type. Hanging parrots and lorries have a Lory nectar. There are now many nectar preparations available, all claiming to be the best and containing their own particular combination of ingredients. We mix our own and provide it in open dishes, except in the case of the more delicate nectar-feeders such as the hummingbirds, sunbirds and sugarbirds, for which we use hanging bottles. Over the years nectars have changed as research has improved, though even now too rich a nectar can be bad for some birds and may cause liver problems. How appropriate it is that Ruth's father, Alfred Ezra, was the first to develop a nectar mixture on which birds thrived - it included Nestlé's condensed milk, Mellin's Food and sugar - and some of the hummingbirds fed on it lived for up to eight years in his collection.

I am often asked about my softbill/insectivorous food. I use a mixture of Haith's Prosecto Insectivorous Food and Bogenia, and sometimes others which vary from time to time. At present I am also using Witte Molen and high protein chick starter crumbs. Once again the varieties available are increasing all the time and there are now even specially formulated diets for touracos and hornbills. What I have done for years is also use hard-boiled eggs with them. I am a great believer in that it puts body into birds. We use the entire egg including the shell, which we mix together in our machine. There are few birds which do not take some of this. It is mixed with the softbill mixture, sprinkled with Vionate (one of the vitamin supplements we use), and fed to the birds daily. Anything left over the next day is taken away just in case it may start to go off and is given to the cranes. I also use ox heart which is mixed in with the insectivorous food. Again I am a great believer in this. The art is to provide just enough food, so that there is a little left the next morning. All too often you see dishes full up and know that the birds have been given enough food to last all week. When we have a new keeper, one of our first tasks is to teach him or her how to judge the correct amount of food to give to the birds.

I use a wide variety of fruits most of which are cut-up but some are chopped in our machine. Certain fruits such as grapes, apples and pears are used all year round but others are used only seasonally. I do not use oranges and never have. Also, whereas a lot of people put fruit on spikes, I do not. Any uneaten fruit is removed the next day. Here again the art is to have just a little left over the next morning.

Once livefood consisted of only maggots and mealworms, but maggots are no longer used since the problems with botulism in the 1970s. Nowadays, I use as great a variety of livefood as I can obtain. What a difference mini mealworms have made to successful rearing, especially during those first few days. At one time we could buy ants' eggs commercially, but this was a long time ago.

Most of my seed comes from Haith's. With large parrots such as macaws and Keas *Nestor notabilis* I use small quantities of sunflower seed and give them plenty of fresh fruit and nuts. The Scarlet Ibis *Eudocimus ruber* have carophyll added to their food during the moult so as to maintain their colour. I use a proprietary diet for the flamingos. The waterfowl have their own food, consisting of wheat, pellets, bread and sea duck food, and seem to thrive on it, as do all the wild ducks, which all seem to know when it is feeding time.

It is wonderful to see the iridescent plumage of the Emerald Starling *Lamprolornis iris* when the sun catches it. It is a quite spectacular and breathtaking bird. I first saw this starling in 1954, when David Attenborough returned from the Zoo Quest Expedition to Sierra Leone, West Africa, with 26. There is a colour plate by David Reid Henry in the *Avicultural Magazine*, 61, 6:261, and notes by my good friend the late John Yealland. Those brought back were mostly in immature plumage but those depicted in the colour plate are in adult plumage. One pair went to M. Delacour and another pair to Mr. Ezra. The rest were retained by London Zoo. I was not fortunate enough to obtain any at the time, but eventually one came into my collection and lived for many years. It was brought back with other birds from Sierra Leone by Ray Shingler, who had been a keeper at London Zoo.

Many years later, in 1979, a dealer rang me to say that he had some interesting starlings including the Emerald. I almost had a fit, for these were the first that had ever been offered for sale. I went at once and bought four or six, which was all I could get. They were placed in a large aviary and the next year (1980), I was extremely excited when two young were reared. It was the first time that this species had been bred in the UK. Emerald Starlings are a flock or colony bird and it is possible to keep several together in a large aviary. A breeding pair will become dominant but given plenty of space in a planted aviary the others will be safe. Emerald Starlings often carry green leaves in their bills, but I remain uncertain whether this is for display purposes or nesting. They have bred for us here at Cobham several times since though not on a regular basis. The nest-box is generally one of the sloping-type, but with a flat bottom and with wire-mesh on the inside to assist the birds to get in and out. The eggs are typical starling eggs, that is mainly light blue with brown/red blotching.

Emerald Starlings appear to withstand our climate pretty well. They are highly nervous when first received. They do not make good show birds as they spend their time on the floor of the cage and their plumage gets soiled. The same thing happens in quarantine and at dealers' premises and this can result in them picking up infections. When I obtained my first ones they were not perfect, but nothing was seriously wrong with them. They bathed extensively at first which as you know happens with a lot of

birds when you first get them. During this period the water should be changed each time after they have bathed, as dirty water can lead to the spread of infection. I find bathing to be a sign of a good healthy bird and mine continue to bath regularly in almost all the different types of weather that we experience here in England.

The breeding of the Splendid Starling *L. splendidus* has already been the subject of an article in the *Avicultural Magazine*, 88, 4:189-190, illustrated with a colour plate by Richard Daniel. My original pair came from Mr. & Mrs T. J. Barnley, near Kitale, western Kenya, which is at the eastern limit of the range of this principally West African species. I must say that this species' name is most appropriate. It is one of the few starlings that is easily sexable, the male being more brightly coloured and larger than the female. They first bred here in 1976, and we were awarded the Society's medal for the first breeding in this country. However, M. Delacour had bred them two years earlier at Clères, which was probably the first ever captive breeding. Over the first few years the Cobham pair regularly produced young, but then they were stolen and were never recovered. I was able to obtain others and have had occasional successes since including in 1992, when one was hand-reared. Patrick Taplin, a keeper at the time, put a great deal of time and effort into raising it. Whereas the Superb Starling *Spreo superbus* readily goes to nest, albeit not always rearing the young, the Splendid Starling will carry green leaves around the aviary perhaps even building an incomplete nest, but nowadays seldom seems to lay fertile eggs. This is in marked contrast to my original pair which hatched every egg they laid and reared all the young. There are still six here at Cobham and I know of a few others in bird gardens and private collections and, hopefully, these will form the nucleus of a breeding programme.

Superb Starlings bred at Cobham in 1996. The Royal or Golden-breasted Starlings *Cosmopsarus regius* though have yet to be completely successful. This beautiful starling has had young about to leave the nest only to let them die. Royal Starlings are very prone to gape worm infections and precautions need to be taken when they are newly imported. However, once they are established they do well even in our damp autumns. Amethyst or Violet-backed Starlings *Cinnyricinclus leucogaster* have also had young about to fledge. Here again this starling is sexable, although mistakes occur sometimes because young males can take up to three years to lose their female-like immature plumage.

American Black-necked Stilts *Himantopus mexicanus* bred here first in 1992, which was another UK first breeding. At present they breed in our two large aviaries. They feed on mixed insectivorous food, minced ox heart and, when we could obtain them, sand eels, which are no longer

available. During the breeding season the male gets a pink flush on his breast (which may not be noticeable in the wild) and this is a sign that he is coming into breeding condition. The display before they mate is wonderful - they looked like ballet dancers - it is really quite spectacular. The male dances around the female and then suddenly they mate. When they bred here in 1992, it was only their second year here. The original pair have yet to lay an infertile egg. Each nest has four eggs which all hatch and all the chicks are reared. There are drawbacks though when they are breeding, as they are not easy birds to keep in a mixed aviary. Once they have young all the other waders have to be removed and they will even fly up and attack birds sitting on the perches. They are wonderful parents which dote on their chicks and have become one of my favourite waders, but it is necessary to keep a careful watch on them. Their eggs have a speckled, dull green background colour, with mottled brown markings. They have a single clutch and have nested in the same place each year for the past five years. The aviary which was known as the Cock-of-the-Rock aviary, has a stream running through it. It is the same aviary in which the Black-winged Stilts *H. himatopus* nested so successfully. They first bred in 1979, which was another UK first breeding. I believe that the Black-necked species is the prettier and more attractive of the two. The Black-winged Stilts received the same diet, but some of them got a gout-like condition in their toes which could cause lameness. Both species are very hardy and will stand in running water when roosting during the winter. As it is always running, the water does not freeze and its temperature is above that of the cold night air. If the water froze then there would almost certainly be problems. In the summer they roost on the ground.

To my surprise and great pleasure, a pair hatched the previous season, successfully reared chicks in their first year. I was surprised that they matured so quickly. I have disposed of the Black-winged species and for a few years now have kept only Black-necked Stilts. These can be disposed of without permission and no paperwork is needed, whereas this is not the case with the Black-winged species. Most people who know me know how I dislike paperwork, and this is why I no longer keep Black-winged Stilts.

I would say that stilts need an aviary not less than 6m x 3m (approx, 20ft x 10ft), with a constant trickle of running water. They carry their food into the water to wash it and if the water is still, an oily film quickly develops on the surface and this causes feather problems. Some of my birds which have gone to other aviculturists have had this problem, but as soon as running water was introduced it disappeared. Sexing is not difficult as the male has a more intense black on the back, with a shine to the feathers, whereas the female's back has a brownish tinge. The young that bred in 1996 could be sexed fairly early on, but generally it takes a year before you can be certain.

This young pair went together very quickly and became aggressive to their nest mates and these had to be removed.

Avocets *Recurvirostra avocetta* breed regularly here at Cobham. It is most gratifying for first time visitors to admire these birds that are once again breeding in considerable numbers in this country. Avocets must be surgically sexed to ensure that you have a true pair. Even this method is not one hundred percent accurate, as I once had 'a pair' resexed, only to find that both were the same sex. Once again, when they have young, Avocets will dominate their flight, so the entire family is put into a side aviary. It is easy to hand net them, even with other birds nesting. Many members who have visited us will have noticed that the grass is always cut around where the waders nest. Once they get used to the mower, they appear to have no fear of it. The same thing happens in the grounds with our cranes, which we are able to go right up to with the mower.

The Wattled Jacana *Jacana jacana* was bred here in 1994, which was possibly a first ever breeding. This is the South American species which has a yellow bill, a red frontal shield and wattles; the outer primaries are yellow and the legs and feet are dusky green. Jacanas or lilytrotters need the right conditions and if provided with them they will thrive, but if they are kept in poor conditions foot problems are inevitable. My pair bred in the waterfall aviary which housed birds up to the size of the Purple-throated Fruitcrow *Querula purpurata*. This jacana is much tougher than the African Jacana *Actophilornis africanus*, although in a bad winter it ought to be put inside at night. We were usually able to walk them in and sometimes they were intelligent enough to walk in on their own. The most fascinating thing about the breeding was that the male did all the work, which as you know is most unusual with birds. He built the nest with only partial assistance from the female and sat all the time. I never saw the female on the nest. When the chicks hatched he carried them in his breast feathers and at first glance they looked like bumble bees with matchstick-like legs. The female stayed in the background, but if a Sparrow Hawk *Accipiter nisus* appeared on or above the aviary, she would come forward and attempt to defend them. Apart from this she did nothing and the male almost appeared to resent her coming too close to defend the chicks or interfere with them. In the centre of the pond there are rocks and also lilies and blanket weed, and it was here that the nest was built. The eggs were a beautiful shining bronze colour. Sexing was very easy as the female is larger than the male. The young could be sexed by their size and this was confirmed about 18 months later when they attained full colour. Although they are not aggressive like stilts and avocets, they did drive off the old jacanas that I had in the aviary, and they had to be removed. Four young were reared in 1994 and three in 1995. I tried the tiny chicks with a dish of

mini mealworms, but am uncertain what they ate at first, however, within a few days the mini mealworms were being taken. At present there is a single African Jaçana here, which is an aggressive bird. As I implied before, I believe that the Wattled Jaçana is much superior and hardier. Getting the young meated-off was not too difficult. We had to mix livefood with the softbill food and then be patient. The main problem is that it is expensive to supply unlimited livefood in a large mixed aviary.

The White-breasted Rail *Laterallus leucophyrrhus*, also known as the Red and White Crake, is a bird that needs some notes written about it, some of them for the wrong reasons. They can be very aggressive, and at times, can be difficult to keep together. I imported a few to go in with our group, but all the new ones were killed by the next morning, which shows how aggressive they can be. In a large planted aviary with plenty of cover in which to hide they will be happy, as every so often one or more will get picked on and will need somewhere to hide. This problem of introducing new birds or a new bird into an established group applies to various species. Surgical sexing is not easy with such small birds - just 18cm (7in) long - and I have had examples that have needed the 'kiss of life' when they stopped breathing and had to be pumped to get them going again. They nest in quite extraordinary places such as quite high up in bushes and in half-open-fronted nest-boxes. We have bred them several times and once again, the young of this South American species are enchanting. As I have already said, White-breasted Rails climb all over the place, one minute they are on the ground and the next they are at the top of a bush. They have been accused of being egg-eaters, but I have not found this to be the case. Mine were good parents, I say this in the past tense, as I now have only two left. They are not breeding and as there are no more available, it may be the last time we see them in our aviaries. They eat fruit and softbill food etc., and also seeds, including various millets.

Roulroul Partridges *Rollulus roulroul* appear to breed well for only a short time, say up to about three years, and then seem to do nothing. In 1956, when I lived in London, I recorded the second UK breeding. The chicks were parent-reared and the following year a Silky brooded and reared the young. At that year's National Exhibition of Cage Birds, held at the Olympia, London, I won the award for the Best Foreign Exhibit with the male and one of his daughters. It was the first time that a pair of English-bred foreign birds had been awarded 'Best Foreign' at what was then our premier exhibition of foreign birds. To the best of my knowledge this also includes the Crystal Palace shows going all the way back into the last century. Here at Cobham I have had several pairs that have bred. My latest pair will not sit on their eggs. I believe there is a strong possibility that they are not parent-reared and in my opinion this causes problems with both infertility

and rearing. Several aviculturists have had fleeting success with a pair or two after which nothing further happened. Most successes appear to be as a result of taking the eggs away to be hatched and artificially rearing the chicks. You seem to end up with an egg layer which does not know how to sit and incubate her own eggs. My original pair were wild caught and they were serious nesters. This latest pair which are captive bred play with nesting material but never make a proper dome-shaped nest. In 1996 the eggs were taken away and placed in an incubator, and five hatched and the chicks were hand-reared. They were raised under a lamp along with a domestic hen's chick to keep them company. I have found that the Roulroul Partridge does not like cold weather and gets frost bitten toes if subjected to low temperatures. In our climate it definitely needs some form of a shelter. This is another bird that does better kept in a glass-covered, as opposed to an open aviary, in which I have experienced problems with them. They are usually okay outside from April to October.

Rothschild's Mynahs *Leucopsar rothschildi* have bred here in the past (using a slanting nest-box), but nowadays it is becoming increasingly difficult to get the parents to rear their young. This is similar to what has happened with the Roulroul Partridge. The mynahs are very striking birds but for some reason have developed the habit of plucking their throat feathers.

In 1984 we achieved the UK first breeding of the West African Violaceous Touraco *Musophaga violacea*. They went on to breed for several years, with their nesting receptacle being a wire-basket, against a wall, in a bush. There they made a dove-like nest from a few twigs. Their diet consisted of diced fruit with added vitamins. Touracos can get liver problems and recently a low iron fruit softbill food has been marketed by Witte Molen, which my touracos now accept. The young seem to leave the nest awfully early and will climb about on the branches of bushes. They remind me of the South American Hoatzin *Opisthocomus hoazin* when they do this, but not at other times. I did not find them aggressive until recently when breeding. I now have a female that absolutely hates women and will attack our female keeper. This bird is not frightened by anyone and remains right up close to the wire of her flight as you walk past. Ross's Touraco *M. rossae* has also bred here. Slightly larger than the Violaceous, it is not imported so often nowadays. My friend Newton-Steele described the first breeding in 1972 (*Avicultural Magazine*, 79, 1: 30-34), for which he was awarded the Society's medal. His pair were extremely aggressive and the male took out one of the female's eyes. Touracos can be very aggressive towards each other, especially when they are kept in a small flight. They do need to be watched when they are breeding, as the males will sometimes persecute the females. We breed the Pink-crested species *Tauraco erythrolophus* most

years. We have also bred Livingstone's *T. corythaix livingstonii* which nests in a box, and have bred Schalow's *T. c. schalowi* and achieved the second breeding of Fischer's Touraco *T. c. fischeri*, one of the young of which is now living in the collection at Leeds Castle. With touracos surgical sexing is the best way of establishing pairs, or you can let them pick their own partners.

The Blue Whistling Thrush *Myiophonus caeruleus* is a very attractive bird which in a good light appears spotted all over with glistening blue, and has the habit of flicking and fanning its tail. However, they can at times be killers and are not to be trusted with birds smaller than themselves, or even birds of their own size, which is about 33cm (13in) long. They were even aggressive towards the Scarlet Ibis. They bred here successfully in 1992 (which was another UK first breeding), when they built a typical thrush nest but larger than usual, due to their larger size. They bred several more times, with the young leaving the nest looking like paler versions of their parents. When nesting the female would attack the keepers and eventually killed the male whistling thrush. It is definitely a species to keep a close eye on, even if there are just a pair on their own in a spacious flight. I have noticed that yellow-billed birds are no longer imported, whereas those with black bills continue to be imported occasionally.

The Island Thrush *Turdus poliocephalus* inhabits numerous south-east Asian islands. The male has a white head, otherwise it is basically a brown bird with a black back, and is similar in shape and size to the European Blackbird *T. merula*. I had a pair of Island Thrushes and then obtained some more and eventually had a male and two females in the same aviary. First one female nested and successfully reared young and then to my utter amazement the second female did the same - the male had mated with both females. They nested in half-open-fronted nest-boxes, which is not normal for thrushes. It is believed to be the UK first breeding of this species.

Kookaburras *Dacelo novaeguineae* have over the years often bred here. Members who have visited us will remember that they bred first in a small enclosure by the garages. Mice and day-old chicks formed the bulk of their diet. You can sex them by sight, but this is not always easy. My present pair are still young.

Azure-winged Magpies *Cyanopica cyana* have bred here on several occasions in recent years. I have in the past kept them in a flock and this seemed to galvanise them into breeding. After cutting back in 1996, I now have only two pairs, one of which reared five young in the lakeside aviary. They are not too aggressive, but it is best to keep them with species of a similar size to themselves. Actually, when they moult their tail feathers, they are quite small birds.

The Red-tailed Siva *Minla ignotincta* bred in 1989 in one of the range of six smaller aviaries. This Asiatic species has a black head with a white



The author with a tame Go-Away Bird



Swallow-tailed Manakin *Chiroxiphia caudata* in Raymond's collection



Red Lory *Eos bornea*

Copyright Thomas Brosset



Congo Peacock *Afropavo congensis*

eye-stripe, a brown back, a yellow belly and a red tail. If it was not for its red tail it would be a difficult bird to spot in a planted flight, I cannot report much about the breeding of this species. They were thought to be sitting, then livefood was taken to the nest and eventually two young were seen in the flight. Of the other two sivas, the Blue-winged *M. cyanouroptera* is a rather highly strung bird, whereas the Chestnut-tailed *M. strigula* is very confiding. Of the three, only the Red-tailed is sexable. Several others have been successful with it in recent years. This species had not been seen in England for many years. In the March 1915 issue of *Bird Notes*, the magazine of the Foreign Bird Club, there is a coloured plate of it painted by Goodchild. It was painted from life from a male owned by Ruth's father, Alfred Ezra. He described the bird as the most fascinating of the softbilled birds that he had kept. It was full of curiosity and not at all frightened. This I can confirm.

A similar story has to be told of the Southern Tit Warblers *Parisoma subcaeruleum*, which were sold as Tit-Babblers, which is their South African name. These small African warblers are mainly grey, with the chin and throat white streaked with black, and have chestnut undertail-coverts. To start with I kept them in one of the six small flights, where in 1989 they built a small compact nest and reared two young. The sexes look alike and the young when they left the nest were merely duller versions of their parents.

Plumbeous Redstarts *Phoenicurus fuliginosus* were successful twice in 1988, rearing three young each time. Once again they bred in one of the six small flights where they nested in a thick currant bush. I did not know that they were nesting until the male went for Alan Lewis their keeper. Others have since been successful with this species. It is a well known bird found from the Himalayas to northern Thailand and western China. The male is basically a dark bluish-slate, with a brightly coloured chestnut tail. The female is greyish-brown, with a white and brown tail. Often pictured in or near water, this species enjoys access to a stream or pond, if possible.

The Black-masked Crimson Tanagers *Ramphocelus nigrogularis* from the Andes were successful in 1992, once again in the range of six flights. Although the aviaries have heated shelters this species will withstand cold weather. What it does not like is damp autumn weather. This can be said of a great many birds. The pair nested in an open-fronted finch-type box and were tolerant of the other aviary inmates. They took a lot of livefood while nesting. Basically black and red birds, they are very striking when viewed for the first time. The female is a duller version of the male and the young are duller versions of their parents. The Black-cheeked Woodpeckers *Melanerpes pucherani* from central and northern South America have, since the first UK breeding in 1992, been successful on numerous occasions including in 1996. Again the breeding has taken place in one of the six

small flights. Not many woodpeckers are imported and few have been bred in captivity. Over the years I have found that woodpeckers enjoy nectar and I ensure it is available to them. In 1954 I wrote a letter about a Cuban Black-browed Woodpecker *Centurus superciliaris*, noting the fact that it was fond of the sunbird's nectar. The sexes of the Black-cheeked Woodpecker are similar with the male having a stronger red cap. The nest site was a Silver Birch tree trunk cut into three sections for ease of handling and moveability. Once they have excavated their nest hole, we just have to wait and hope. I believe that the young are in the nest for about three weeks, which seems a long time. When we see lots of food being taken into the log, we know they have young. It is, of course, impossible to see inside. The log had a small hole and this was where the woodpeckers started to drill. I made the point earlier, that the young seemed to be in the log for a long time, and I wondered if it was the parents that were eating all the livefood. We could not hear any noises coming from inside, but eventually four young emerged. The male continues to drill even when the female is sitting. These woodpeckers are now in one of the three covered flights by the Koi Carp pool. They like fruit, softbill food, livefood and nectar. They have a Scarlet-chested Sunbird *Nectarinia senegalensis* sharing their flight, and it is a pleasure to see the sunbird and a woodpecker drinking from the same dish of nectar. They are not particularly aggressive and, when they first bred, had a pair of Black-naped Fruit Doves *Ptilinopus melanospila* in the flight with them.

Blue-faced Honeyeaters *Entomyzon cyanotis harteri*, from southern New Guinea and northern Queensland, bred here first in 1992. It is a species which I never expected to see again. In 1960, Chat and Lindsay exhibited a pair at the National Exhibition of Cage and Aviary Birds at Olympia, London, where they won their class and eventually won the award for the Best Large Foreign Softbill. I obtained six in 1991. They are kept in an aviary with a shelter that is heated during the winter. Two pairs nested though only one pair did so successfully. They nested in a wire basket and it was not difficult to rear the young which were left with their parents. The colony was progressing well but when I attempted to introduce more of them this caused problems. The new birds were resented and were attacked and had to be removed. This is a common problem with many birds. Whenever possible I try to obtain four to six birds, especially as most are not sexable. You breed them and the birds thrive, but eventually one or more may die. You obtain a replacement or replacements but introducing them is I find a strain both on me and the birds. If you keep birds in a birdroom you can put the new bird or birds in a cage and allow them to get to know each other through the wire. In aviaries, when I do this, I introduce them into the aviary and watch and pray that the new birds and the old birds will get on well together. It is usually the first 24 hours that cause

most concern. After this it is when nesting takes place that problems are most likely to occur. The aggression which starts with lots of calling and may end with fighting, invariably starts when you are not there.

I had problems with egg eating in 1994 and 1995, so in 1996 when a single honeyeater egg was seen, it was taken away to be hatched in an incubator and the chick hand-reared by Sheila Becker. When it was newly hatched, you could not tell what it was, but when the blue started to break through on its face, you knew at once it was a Blue-faced Honeyeater. The chick was fed on the touraco diet, with pawpaw and added vitamins, together with the squeezed out contents of mealworms and little grubs. The chick soon learnt to pick up food for itself and all went well. I prefer parent rearing but in this case there was no choice. With the addition of this youngster there will be five in the group, so its introduction will not be easy.

Green Wood Hoopoes *Phoeniculus purpureus* have been bred before, the first time in UK being at Winged World at Heysham, Lancashire. They are very interesting birds and kept in a large mixed aviary next to the waterfowl aviary. Four were obtained and very quickly it was obvious that a pair were nesting. The nest-box was the usual type hung at an angle. When they were rearing their young an enormous amount of livefood was being put in to the aviary. Then I hit on an idea, I put ½in (12mm) wire netting over the top of a large hook-on feeding pot, so that the wood hoopoes with their long bills were able to take the livefood but it was out of reach of the other birds. I found them to be very good parents, which made a great fuss of their young. I also noted that the other two helped them with the feeding. However, they do not like new inmates in their aviary and can be murderous to their own kind, if you attempt to introduce newcomers into the colony. In the case of other species, it is not that they kill them, it is that they pursue them around the aviary, interfere with nest-boxes and generally make the new birds feel insecure. Wood hoopoes roost in their nest-box.

Ringed Plovers *Charadrius hiaticula* were successful for several years. I kept the pairs separated and my last pair were excellent parents. They nested against the wire in the main aviary where the dogs walk up and down outside during the day. When the dogs did this the plovers would fly against the wire to try to drive them away. They were great characters and gave me no problems for they were very protective of their young. Unlike the stilts, they were not aggressive towards other birds. In 1992, I had another first breeding, this time with the Masked Plover *Vanellus miles* which comes from the south Moluccas, Kei Island, New Guinea and northern and eastern Australia. This species has a yellow bill and large yellow wattles, a black crown and nape, and the sides of the head, the neck and underparts are white. Mine are extraordinarily prolific. There are three

nests a year with 100% fertility. I have had them sitting in the snow and still be successful, although I much prefer them to nest later in the year, as the winter days are so very short which is not conducive to good reproduction. The nest is a scrape in the ground lined with a few twigs.

A great disappointment has been my failure to persuade my pygmy geese to nest. They display but do nothing else. Mine are African Pygmy Geese *Nettapus auritus*. They are the prettiest, but are not free breeders. Mine may well be the oldest pair in captivity, for they are over ten years old and this is now beginning to show. My stilts do not bully them even when they are nesting. They are highly nervous birds. I recently acquired two more pairs which I have in the waterfall aviary and shut into a shelter at night if it is at all cold.

Doves have been quite successful here at Cobham. The Black-naped species has bred now for some six years. The Beautiful Fruit Pigeons *P. pulchellus* rear a single chick but so far all have been males. The Jambu *P. jambu* and Superb *P. superbus* have also been successful. As you may know, it is easy to get doves to nest but their nests can be quite literally next to nothing. A pair of Beautiful nested on a leaf! We stitched a small basket to the leaf but it was still not successful. It is most important that the fruit for these doves is chopped very small. It is no good giving them mushy fruit or half a pear because, if you do, it will get stuck around their beak and face. With small chopped fruit they can eat it whole and it goes straight down and they do not get sores in the sides of their mouth. They will also take livefood such as mealworms, also nectar.

Golden Heart *Gallicolumba rufigula* and both Luzon and Bartlett's Bleeding Heart Doves *G. luzonica* and *G. criniger* have bred here over the years. The Luzon lays two eggs and Bartlett's a single egg. My present pair of Bartlett's have reared six young. These doves like seed, peanuts and insectivorous food, plus livefood. Doves are not energetic birds and will sit in the same place for days. However, if they are panicked, they crash about and untold damage can be done, especially when other birds are nesting. They can get foot problems when the ground is frozen, so heated accommodation is advisable in our climate during the winter. It is also best to house only a single pair of doves in a flight, unless it is particularly spacious, as especially when they are nesting, they may attack and kill other doves.

The Black-billed Weaver *Ploceus melanogaster* is found from eastern Nigeria to Uganda and western Kenya, where it lives singly or in pairs, mainly in forest undergrowth. The male's forehead, crown and the sides of the face are yellow. There is a black streak through the eyes and the rest of the plumage and the bill are also black. The female has the chin and the front of the neck yellow, uniform with the sides of the face and the forehead.

It has never been easy to breed weavers and reports of breeding successes are few and far between. I imported my Black-billed Weavers direct from Kenya and achieved the UK first breeding with this species in 1976. They made a typical hanging weaver's nest. When breeding they were totally insectivorous and never appeared to take any seed. It is now many years since I kept this species and the chances of ever getting it again must be very small. The Madagascar Weaver *Foudia madagascariensis*, which has always been one of my favourites, bred here several times in the 1980s. It is a peaceful bird that does well in a colony.

I cannot claim to be well known for breeding parrots but I have had some successes. Keas, perhaps the most interesting of all parrots, have bred here most years, always early in the year. A lot of Keas in this country can be traced back to my original pair. The female came from Jersey Zoo and the male from New Zealand. The male remains keen on mating, but they are too old to breed now, for they are probably over 30 years old. I have had up to four young in a nest, but on the last occasion there were only two. When nesting the female gives out a scream if anyone comes near, otherwise Keas really are secretive when nesting and the female is sort of guarded by the male. The nest-box is constructed from breeze blocks with a lid made of paving slabs, so that they have a nest chamber similar to that which they use in their native New Zealand.

Keas enjoy a very varied diet which includes various nuts, plus fruit, lettuce and mealworms. You will have heard or read the stories of how they attack sheep, but I doubt that they do this. Many parrots will eat meat and we have all heard stories of pet African Greys *Psittacus erithacus* tucking into the Sunday joint and two veg. My good friend the late Sydney Porter was the first to breed Keas in 1946 and for this got the Society's medal, which is now in my possession. He visited New Zealand and could in fact find no evidence that they kill sheep. Keas are very inquisitive and highly active. His birds played all the time and especially enjoyed playing with a cup. He had them in an aviary with running water which they liked to run through. I have often thought that I should put mine into one of my larger flights.

Although not colourful birds, Keas have wonderful orange feathering under their wings, which is seen only when they fly. They seem to enjoy calling at night. Sydney had this problem and got complaints from his neighbours. He always said that he would dispose of them but they were still there 20 years after the complaints started. When he died he left his Keas to me.

When I bred Stella's Lorikeet *Charmosyna papou stellae* it was for the first time since E.J. Brooks bred it before World War 1. My pair used a typical upright box in a small aviary where they could sample fruit and nectar. These lorikeets love to bath and enjoy rubbing their plumage on

wet leaves after it has been raining. I am not a great believer in covered aviaries. I was also successful with the Red-flanked Lorikeet *C. placensis* but quickly sold the parents when I caught them attacking and eventually killing a Malayan Crested Jay *Platylophus galericulatus* and a Blue-breasted Kingfisher *Halcyon malimbica*. Most people have had no trouble with them and others since have been okay. It shows how careful and observant you need to be. Philippine Hanging Parrots *Loriculus philippensis* have bred here on numerous occasions. Some 'disappeared' in 1995 when I had a small colony. I never did find out what happened to them, although I have my suspicions. Early last year (1996) the parents left a single chick on two occasions. Then just when I was considering hand-rearing the chicks, if the parents nested again, they reared three young.

I have had Salvadori's, Edwards' and Double-eyed Fig Parrots *Psittaculirostris salvadorii*, *P. edwardsii* and *Opopsitta diophthalma* but these were not easy to keep alive. I found that they got into beautiful breeding condition then dropped dead and post mortems failed to reveal the causes of death. More recently Vitamin K has been found to be beneficial. London Zoo had a female Double-eyed Fig Parrot in a small box cage for about 15 years. It was fed on seed (millets, canary seed, sunflower and hemp), the same nectar as that given to the hummingbirds, sunbirds and sugarbirds, fruit, insectivorous/softbill food and mealworms. At the time it was the only fig parrot most people had ever seen. It was one of two females and a Plicated Hornbill *Aceros plicatus* brought over by David Attenborough, along with a consignment of birds of paradise which Sir Edward Hallstrom presented to the zoo.

Scarlet Ibis were not successful until last year (1996), when a chick was hand-reared. The flamingos have always looked lovely but only one has been bred. Vulturine Guineafowl *Acryllium vulturinum* have been allowed to wander free and have laid eggs in the grounds and some were hatched. I can remember my good friend Donald Risdon saying: 'All you have to do is to catch up the young and their parents and put them in an aviary while the young grow.' I found that this was not as easy as it sounded and after a time gave up and left them to their own devices. Some aviculturists find these birds are susceptible to foot problems. Perhaps this is related to their diet. It is something I can remember Reg Partridge telling me about.

Cranes are certainly long lived and give immense pleasure. We have had various species here at Cobham. They always seem to be in peak condition and love to display on the lawns. As with many such park birds, surgical sexing is generally required. Probably the best way to breed cranes would be to have full-winged males were that possible. Pinioned males may find it difficult to keep their balance when mating. Stanley Cranes *Anthropoides paradisea* have been successful here. At present we have a

pet female called 'Emma'. Demoiselle Cranes *A. virgo* have bred as well, but sadly, the Crowned Cranes *Balearica pavonina* have not. In fact, in all the years they have been here, try as I may, I have never even seen them mate. Our cranes get corn, pellets and the left-overs from the aviaries.

Of the more unusual pheasants, I must mention the Palawan Peacock Pheasant *Polyplectron emphanum* and also the Congo Peafowl *Afropavo congensis*, both of which have been reared successfully here at Cobham. The Palawan lays just a single egg. This species is susceptible to cold and damp weather. The Congo Peafowl is similarly affected by our climate. I believe that I was the second person to breed this species in this country, and was really pleased with this breeding. They were kept in the secluded aviary where the Choughs *Pyrrhocorax pyrrhocorax* are at present. Heat was provided in their shelter and they could go out at any time and walk about on the grass. Mine came from Antwerp Zoo, where they were kept in a very dry environment in sandy pens in order to help prevent disease. Here they were offered a varied diet and their feather quality started to improve and a shine returned to their feathers which had started to curl up. The main problem here was that the two males both burst their main artery and died immediately. After this occurred for the second time, the female was sent to London Zoo.

To complete these notes I have to mention an unsuccessful breeding back in August/September 1980. This was when my pair of Scarlet Cock-of-the-Rocks *Rupicola peruviana* hatched two chicks that lived for only a few days. Perhaps the more varied livefood available these days would have assisted in a successful outcome. The male died soon after mating, while the female, which came from Len Hill at Birdland, Bourton-on-the-Water, lived here for several more years. I should perhaps state here that my male cock-of-the-rock that lived here for 16 years was not the male involved in the unsuccessful breeding attempt.

BREEDING THE THREE-BANDED ROSEFINCH

Carpodacus trifasciatus

by Eric Callaghan

Introduction

The Three-banded (or Three-barred) Rosefinch is a medium-sized rosefinch that is native to western and southern China. The habitat is given as conifer forest, undergrowth and thickets at between 2,130m and 3,050m (approx. 7,000ft and 10,000ft). In the late autumn and early winter it descends to 1,800m (approx. 5,900ft), to foothills and valleys, and in the winter is found in orchards, hedges and barley fields. Its breeding biology is described as 'virtually unknown' (Clements, P., Harris, P. and Davies, J., 1993).

The adult male has a dark red head with white shaft streaks on the lores, cheeks and ear-coverts. The upperparts are grey, with a strong reddish tinge. The breast and flanks are wine-red, with the sides of the breast grey, while the centre of the lower breast, the belly and the lower flanks are white. The outer scapulars are white, forming a diagonal band above the closed wing, while the feathers of the median and greater wing-coverts are tipped with pink, thus producing the three-banded effect that has given the bird its common (and scientific) name. The female and juvenile have grey upperparts, streaked with black, yellowish-buff edges to the tertial feathers, warm orange-brown on the throat, breast and flanks, with the rest of the underparts white. This rosefinch measures 17cm-19.5cm (6¾in-7¾in) in length and conveys the impression of a solidly-built, sturdy species.

Housing

Two pairs of Three-banded Rosefinches were obtained in January 1994. During the following spring one of the females died, leaving a spare male. The pair was housed in an aviary measuring 4m x 1.5m x 2m high (approx. 13ft x 5ft x 6ft 10in high). The aviary was divided into two adjoining enclosures, each approx. 2m (6ft 7in) long but the dividing door was left permanently open. The back and one side of the aviary are solid and part of the roof is covered with perspex. The aviary is unplanted, save for a 1.5m (approx. 5ft) *Mahonia aquilegifolia*, as the birds destroyed any other attempts at planting. Bundles of heather are tied around the back and sides to provide cover. Short lengths of conifer branches were placed at the front corners, just below the roof, as experience with Pallas' Rosefinch *C. roseus* has shown that these would be preferred nesting sites. Indeed these were the sites chosen for nesting.

From the beginning the pair shared the aviary with a pair of Yellow-throated Buntings *Emberiza elegans* and a pair of Rufous-bellied Niltavas

Niltava sundara, neither of which attempted to nest. No aggression towards these species was recorded. Occasionally the male niltava would briefly chase one of the other birds, but nothing serious ever occurred. Perhaps it might have been different if the niltavas had gone to nest.

Feeding

This consisted of a canary seed mixture, mixed millets (rarely touched) and 'Puik' wildbird seed mixture. In addition, there was softfood for the niltavas which consisted of a mixture of Witte Molen Universal softfood and a homemade food, based on Cédé eggfood and ground peanuts. Mealworms were offered regularly, but the rosefinches were never seen to touch them. Greenfood, in the form of chickweed, was always popular. As with most species with red in the plumage, a colouring agent was required during the moult to maintain the colour of the feathers. This was supplied in the drinking water. One effect of this has been to produce a deep reddish tinge to the plumage of the female and the immatures that is apparently not present in wild birds. Bathing facilities are always available.

1994-1995

The first year (1994) passed uneventfully, as the birds were settling down, although it was noticeable from the very beginning that the birds were steady and not shy. In March 1995 both males became ill from an unknown cause (the extra male was housed in a separate aviary), but both recovered after a few days. Throughout the summer both males sang and carried nesting material in the form of lengths of fibre and down. Whenever the female attempted to pick up material she was attacked and chased by the male, and was forced to drop it. The attack consisted of the male advancing rapidly along the perch, with the head lowered, the beak open and the mantle feathers raised. This was accompanied by a loud 'tsick, tsick' call. What sounded to be the same call was occasionally uttered from a perch in early May, apparently as an advertising call, and whenever I entered the aviary after nesting had begun. The song of the male is a continuous, high-pitched, squeaky, twittering sound that is delivered so faintly that it cannot be heard from any distance away. It seems to be uttered as the male moves around the aviary, rather than delivered from a fixed song post.

1996 - Breeding

In the spring both males again became very ill and the unpaired one died. The second male made a complete recovery. At no time was the female affected. Again the female was attacked by the male whenever she attempted to pick up nesting material, but this time she was more persistent and by 18th May both were seen carrying bundles of coconut fibre. On 22nd May the female was seen carrying heather and birch twigs up to one

of the branches that had been fixed at the front of the aviary. These twigs were about 15cm (6in) long. After three days no progress had been made as the twigs fell from the site each time the female left, and as she never retrieved any of them a small pile formed on the ground below. At this point I fitted a wicker basket at the intended nest site, with the result that the female promptly abandoned the site and started to attempt to build at the other site at the front of the aviary, with exactly the same result, as again the twigs failed to lodge there. Finally, on the 2nd June, the female returned to the first site and started to line the basket with coconut fibre. By the 5th June she was adding an inner lining of goat hair, plus a few feathers. The first egg was laid on the 8th June and was bright blue with just a few black spots at the blunt end. It was a typical rosefinch egg. A total of three eggs was laid and the male was occasionally seen feeding the female on the nest. At no time was the male seen to feed the female away from the nest, nor was any courtship behaviour witnessed, or copulation.

Two eggs hatched on the 22nd June, the third hatched the following morning. The newly-hatched chicks were dark-skinned, with dark grey down. The gape was red. In an attempt to rear at least some of the young, one chick was transferred to a canary that was incubating an infertile clutch of eggs. All three chicks were very well fed, at times having crops so full that they looked about to burst. The male rosefinch took an equal part in the feeding of the young. For the first week the birds fed almost exclusively on seeding chickweed. Soaked seed and eggfood were offered but were not touched until the chicks were over a week old. Livefood was totally ignored. The young grew very well and by the 28th June the female had ceased brooding them for much of the day. It was very noticeable how solid and bulky the nestlings felt whenever they were handled, an intrusion which apart from producing the vocalisations already referred to, never seemed to bother the parents unduly.

Unfortunately I was away from the 1st to 14th July, but I understand that the first chick fledged on the 7th July. On my return on the 14th both chicks were looking very strong (the chick fostered with the canary had failed to survive) and their tails were about one-third full length. In addition, I was surprised to discover that the female was sitting on a new nest at the second site, where I had placed a second wicker basket. This nest contained four eggs. This is in contrast to the Pallas' Rosefinch, which I had bred previously, where a second nest was never attempted, even in cases where the first nest had failed. During the incubation period of the second clutch, the young of the first brood developed the habit of sitting beside the female, even though the male had taken over all their feeding. The young were seen to pull at the nest and remove some of the material, so both they and the male were moved into the second half of the aviary and the connecting door was closed. The other species were also confined to this half, leaving

the incubating female totally alone. This did not appear to bother the female and the following day (22nd July) one egg hatched, indicating that the first egg must have been laid just after the first brood fledged. At this stage there were only two further eggs in the nest. Neither of these hatched, although both were fertile. One was slightly damaged and half of the shell of the egg which had hatched had capped the other egg. The female reared the single chick without any problems and it fledged on the 9th August, therefore taking longer than the previous brood, that had been fed by both parents. On the 16th August the interconnecting door was re-opened and all the birds were allowed to mix. On fledging the young were a dull grey in colour, with pronounced streaking on the breast.

Colour-feeding was resumed at the end of August and while both young of the first brood developed red in their plumage, the chick from the second brood failed to do so, indicating that it was not consuming any of the treated water. This youngster developed a greenish-yellow colour where the others were red. Of the first two young, while both superficially resembled the adult female, on closer examination one was seen to be slightly brighter than the other, with slightly more extensive colour. The uncoloured immature seemed to follow the second chick from the first brood with regard to its plumage pattern. This suggests that perhaps I had one male and two females. Later the 'female-coloured' immature from the first brood died and on dissection proved indeed to be a female. The remaining young were left with the adults throughout the winter until the beginning of March 1997, when the adult male began to chase them a little.

In terms of general management these rosefinches have presented no problems, save for the mystery illness of the males. Unfortunately, it was not possible to arrange to have a post-mortem examination carried out on the one that died. The birds showed no aggression towards other species and the rearing of the young was quite straightforward, without the inconvenience of having to supply livefood.

Reference

CLEMENT, P., HARRIS, A. and DAVIES, J. (1993). *Finches and Sparrows, An identification Guide*. Christopher Helm/A. & C. Black, London.

Eric Callaghan's bird keeping interests are varied. At present he is particularly interested in the rosefinch group of birds, with special emphasis on their breeding behaviour. He is attached to the Department of Zoology, University College Dublin, Belfield, Dublin 4, Ireland.

As described above, the Three-banded Rosefinch *Carpodacus trifasciatus*, has been bred by Eric Callaghan. This is probably the first successful breeding of this species in Great Britain or Ireland. Anyone who knows of a previous breeding is asked to inform the Hon. Secretary.

SEASONAL WEIGHT VARIATION IN FOUR SPECIES OF CAPTIVE CRANES AT THE INTERNATIONAL CRANE FOUNDATION

by Carmen Davis

Abstract

The body weights of four species of cranes kept at the International Crane Foundation (ICF) were used to establish a normal baseline of seasonal weight variation in captive cranes. The non-migratory Florida Sandhill Crane *Grus canadensis pratensis*, and three migratory cranes: Siberian *G. leucogeranus*, Whooping *G. americana*, and Red-crowned *G. japonensis* were studied. Weights were assigned to one of three seasons and mean weights for each season were calculated for both sexes of each species. Percentage weight gain between summer and winter was calculated for those individuals that had weights in all three seasons. Statistical analysis revealed significant weight gain from summer to winter for all groups except female Florida Sandhill Cranes. There was no apparent relationship between the magnitude of seasonal weight gain in captive birds and the migration pattern of their wild counterparts.

Introduction

In captive management of cranes, body weight can be a useful indicator of health; below-normal weight may indicate illness. Since cranes often experience large seasonal weight variation, normal published seasonal weight values are needed (Swengel, 1992). Weights were collected for Siberian, Florida Sandhill, Whooping, and Red-crowned Cranes kept at ICF. The weights of 134 individuals were used to establish a normal weight baseline for captive cranes. Weights were also analyzed to test hypotheses about variation in seasonal weight gain between migratory and non-migratory species.

Methods

The four species chosen for analysis include three migratory species and one non-migratory species, the Florida Sandhill Crane. It was hypothesized that migratory species would experience greater seasonal weight variation. An earlier study documented significant weight gain during spring migration in wild Arctic-nesting Sandhill Cranes (Krapu et al., 1985). I also tested the hypothesis that among migratory species those that migrate the farthest distance would experience the greatest weight gain. Weights were obtained from ICF health records between 1980 and 1997. Weights were collected from 134 individuals: 45 Whooping, 37 Siberian, 29 Florida Sandhill and 23 Red-crowned Cranes. The weights of birds less than one year old were excluded from the study because these

individuals may not have been full-grown. Weights taken when a bird was known to be seriously ill were also excluded. If an individual was weighed more than once in a given month, the mean weight for that month was used. This resulted in a total of 442 weights.

Weights were assigned to one of three seasons: 1=summer (April-August), 2=fall (September-October) or 3=winter (November-March). It was hypothesized that body weight would be greatest in winter and least in summer. Initially, it seemed that assigning four seasons would have greater statistical power in describing seasonal weight variation. However, the sample size for spring (March-April) weights is much smaller than for the other seasons and spring weights did not seem to differ much from summer weights. Therefore, linear regression analysis of weight versus season using both the three and four-season models was conducted. The three-season model yielded a better description of seasonal weight variation. Mean weights for both sexes of each species in each season were computed using all of the weights collected.

Forty-four individuals had weights for all three seasons: 13 Siberian, nine Florida Sandhill, 13 Whooping, and nine Red-crowned Cranes. A mean weight for each of these individuals in each season was determined. The mean percent weight gain between summer and winter was calculated. Paired t-tests of summer and winter weights and linear regression analysis of weight versus season were conducted for both sexes of each species. For regressions, summer was coded as 1, fall as 2 and winter as 3. Statistical analysis and graphs were done using Systat 5.03.

Results

Mean seasonal weights of males and females of each species are presented in Table 1. Seasonal weight variation of all males and females of all four species, regardless of whether they had weights in multiple seasons, is illustrated in Figures 1-4. The results of paired t- tests of summer and winter weights are displayed in Table 2. Results of linear regression analysis of mean weight versus season for birds weighed in all three seasons are presented in Table 3. Positive R-values indicate that the birds gained weight from summer to fall to winter. Table 4 shows the mean percent weight gain between summer and winter for individuals weighed in all three seasons.

Discussion

Every group except for female Florida Sandhill and male Red-crowned Cranes experienced significant variation in mean weight between summer and winter based on paired t-tests (Table 2). Weights were higher in winter for all of the t-tests. Linear regression analysis also yielded significant variation of weight with season for all groups except male Siberian, male Whooping and female Florida Sandhill Cranes (Table 3). Female Florida

Sandhill Cranes were the only group to not have significant weight variation with season using either test.

Variation in seasonal weight gain between species did not match the expected pattern. Seasonal weight gain in females came close to fitting the expected pattern; Florida Sandhill Cranes experienced the least weight gain between summer and winter and Siberian Cranes experienced the greatest (Table 4). In contrast, male Siberian Cranes experienced the least weight gain even though they are the farthest migrating species of the four studied. Male Red-crowned Cranes underwent the greatest seasonal weight gain despite having the shortest migration distance of the three migratory species studied. Unfortunately, sample sizes are small because few birds were weighed in both summer and winter. More data should be collected in order to analyze statistically the variation in seasonal weight gain between species. The role that captive conditions play in seasonal weight variation should also be considered.

The cranes at ICF have access to a nutritionally-balanced food supply throughout the year. Food is readily available whenever the cranes want to eat. In addition, they have a limited opportunity to exercise relative to wild cranes and they never migrate. Since ICF is located at 43.5°N latitude it is possible that fall weight gain is largely due to the onset of harsh winter temperatures and subsequent increased food intake. Likewise, spring weight loss could be explained by decreased food intake as warm temperatures return and breeding begins. A study of food intake in captive White-naped Cranes *G. vipio* suggests just such a pattern (Jing, 1991).

Swengel (1992) points out that cranes may exhibit different degrees of weight variation depending upon the latitude and captive conditions of their facility. Individuals using the mean seasonal weight values provided in Table 1 should keep these factors in mind. Obviously, there is also variation in seasonal weight patterns between different individuals, regardless of the species. Therefore, it is ideal to establish normal weight criteria for each individual crane.

Acknowledgement

Thank you to Scott Swengel for the idea to write this paper and for comments that helped to improve the manuscript.

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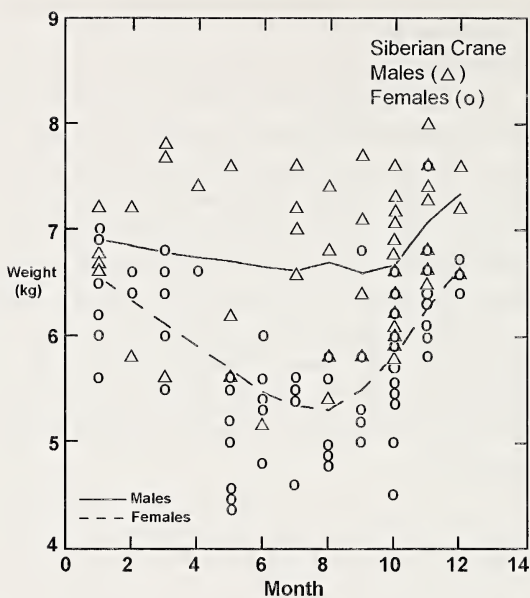


Figure 1. Siberian Crane body weights by month with locally weighted scatterplot smoothing (LOWESS) line.

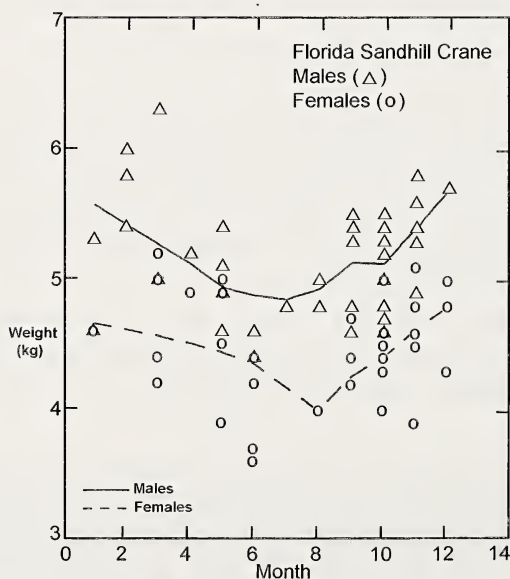


Figure 2. Florida Sandhill Crane body weights by month with LOWESS line.

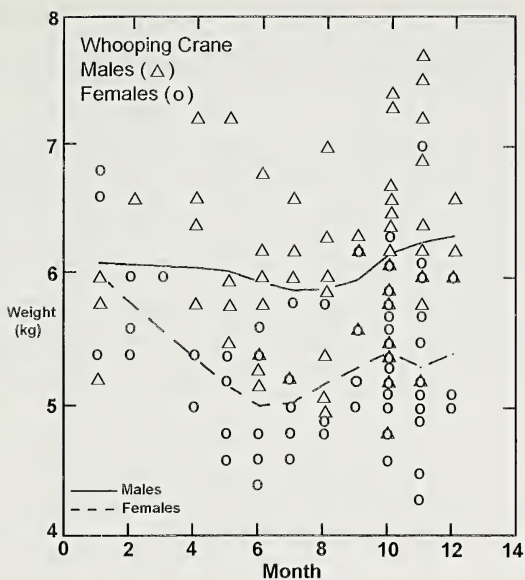


Figure 3. Whooping Crane body weights by month with LOWESS line.

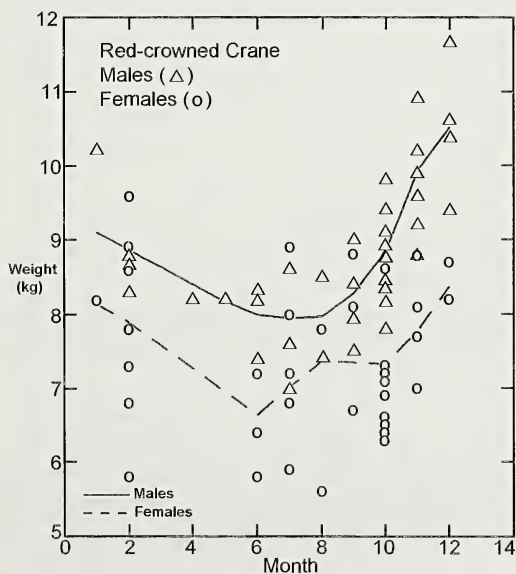


Figure 4. Red-crowned Crane body weights by month with LOWESS line.

	Siberian		Florida Sandhill		Whooping		Red-crowned	
	Males	Females	Males	Females	Males	Females	Males	Females
Summer								
Mean	6.571	5.379	4.855	4.282	5.963	5.005	7.940	6.960
SD	± 0.841	± 0.478	± 0.301	± 0.496	± 0.637	± 0.432	± 0.544	± 1.071
Range	5.2-7.6	4.6-6.6	4.4-5.4	3.6-5.0	4.8-7.2	4.4-5.8	7.0-8.6	5.6-8.9
N	14	19	11	11	30	21	10	10
Fall								
Mean	6.668	5.744	5.120	4.420	6.133	5.411	8.613	7.300
SD	± 0.564	± 0.534	± 0.337	± 0.237	± 0.575	± 0.441	± 0.659	± 0.869
Range	5.8-7.7	4.5-6.8	4.6-5.5	4.0-5.0	4.8-7.4	4.6-6.3	7.5-9.8	6.3-8.8
N	22	25	20	15	27	27	15	14
Winter								
Mean	7.009	6.393	5.469	4.643	6.289	5.578	9.840	8.006
SD	± 0.691	± 0.462	± 0.468	± 0.369	± 0.690	± 0.680	± 0.977	± 0.900
Range	5.6-8.0	5.5-7.6	4.6-6.3	3.9-5.2	5.2-7.7	4.3-7.0	8.3-11.7	5.8-9.6
N	23	27	13	14	19	23	15	17

Table 1. Mean Seasonal weights (kg) of males and females of four species of cranes at ICF.

	Probability	Mean Weight (kg)		N
		Summer	Winter	
Siberian				
Males	.005	6.614 $\pm$ 0.821	7.000 $\pm$ 0.823	7
Females	.001	5.383 $\pm$ 0.354	6.333 $\pm$ 0.393	6
Florida Sandhill				
Males	.017	4.980 $\pm$ 0.295	5.580 $\pm$ 0.402	5
Females	.512	4.525 $\pm$ 0.519	4.675 $\pm$ 0.189	4
Whooping				
Males	.015	6.267 $\pm$ 0.432	6.867 $\pm$ 0.653	6
Females	.001	4.886 $\pm$ 0.426	5.443 $\pm$ 0.538	7
Red-crowned				
Males	.060	7.733 $\pm$ 0.404	10.500 $\pm$ 0.854	3
Females	.007	7.200 $\pm$ 1.097	8.350 $\pm$ 0.812	6

Table 2. Paired t-tests of mean summer and winter weights for males and females of four species of cranes at ICF.

	Multiple R	P	N
Siberian			
Males	.214	.353	21
Females	.696	.001	18
Florida Sandhill			
Males	.615	.015	15
Females	.200	.534	12
Whooping			
Males	.443	.065	18
Females	.447	.042	21
Red-crowned			
Males	.890	.001	9
Females	.483	.042	18

Table 3. Linear regression analysis of mean weight versus season for males and females of four species of cranes at ICF

	Mean Weight Gain	
	Males (N)	Females (N)
Florida Sandhill	12% (5)	4% (4)
Red-crowned	36% (3)	13% (6)
Whooping	10% (6)	11% (7)
Siberian	6% (7)	18% (6)

Table 4. Mean weight gain between summer and winter for males and females of four species of cranes at ICF (in ascending order of migration distance).

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RODE 1995

by Mike Curzon

1995 was a good year here at The Tropical Bird Gardens, Rode, with 58 species being bred, excluding domesticated varieties. Improvements and alterations to aviaries were ongoing and the summer was very hot with long dry spells. No large macaws were reared due to thefts in 1994 and at the end of 1995, when there were two break-ins, the second on the night of Thursday 30th November, resulting in the loss of our pair of Hyacinth Macaws *Anodorhynchus hyacinthinus*. Despite some leads and a search entailing driving over 2,000 miles (approx.3,200km), they still have not been recovered. A substantial reward for information leading to their return and a subsequent conviction remains on offer.

Waterfowl had a reasonable year of which the highlight was the breeding of two Australian Shelduck *Tadorna tadornoides*. It was the first time that this species - Donald Risdon's favourite shelduck - has bred at Rode. The female laid her clutch of nine eggs in the centre of a large clump of pampas grass. Three young hatched of which two were reared and later were sent to Paignton Zoo. Red-breasted Geese *Branta ruficollis* were reared under a bantam, and we also reared our first ever Hawaiian Goose *B. sandvicensis*. Eight Temminck's Tragopans *Tragopan temminckii* were also reared under bantams and were another first breeding for us. A single Satyr Tragopan *T. satyra* was reared by a bantam.

A new male Sonnerat's Jungle Fowl *Gallus sonneratii* lent to us by Dave Coles at the Childe Beale Trust, led to an improved performance by our Sonnerat's Jungle Fowl, with ten being raised under bantams. Two Green Peafowl *Pavo muticus* were another first breeding for Rode. The male came from Paignton Zoo ten years ago, while the female was obtained from a friend in Chippenham, who found it walking up his drive. When he rang to offer the bird to us, I thought he was joking and expected the Indian species *P. cristatus*. He brought it over within the hour and it was readily accepted by our peacock. A single Grey Peacock Pheasant *Polyplectron bicalcaratum* meant this lovely bird was bred at Rode for the 30th consecutive year.

Rode is well known for its parrot collection and in 1995 our Red-tailed Amazons *Amazona basiliensis* bred for the second time. Two young were reared. We bred our first youngster in 1994, for which we received the Avicultural Society's first breeding award. When the article was published, I suggested that it was probably the first European breeding and perhaps a world first. The article was also published elsewhere and brought a letter from J. M. Forgach, a Brazilian, who said that several have been bred there.

There was in 1995 a definite policy change with the decision to parent-rear young and hand-rear only in emergencies. This resulted in only three Double Yellow-headed Amazons *A. ochrocephala oratrix* being hand-reared from two weeks old, when the female looked very tired. She laid again and from three eggs produced two young. This is our old breeding pair. Three Hahn's Macaws *Ara nobilis* were a noteworthy breeding, as was a single Eleonora Cockatoo *Cacatua galerita eleonora*, which was another first breeding for Rode.

Pink-crested and Livingstone's Touracos *Tauraco erythrophus* and *T. corythaix livingstonii* were both first breedings for us, and a single White-cheeked Touraco *T. leucotis* made it a good year for us with this family of birds. Purple Glossy Starlings *Lamprolornis purpureus* from the old breeding group established in 1964 reared two young. Two Greater Hill Mynahs *Gracula religiosa* were parent-reared, as were four Laughing Kookaburras *Dacelo novaeguineae*. Toucan Barbets *Semnornis ramphastinus* and Yellow-fronted Tinkerbirds *Pogoniulus chrysoconus* each produced a single youngster, breeding accounts of which appeared in the *Avicultural Magazine*, 102, 1: 6-7 and 36-38 respectively.

Among the doves a single Celebes Quail Dove *Gallicolumba tristigmata* stood out as another first breeding for us. It was reared in one of the aviaries in Yew Tree Walk. The pair built a nest 45cm (17¾in) above the floor in the shelter. Paul Sherbourne, the keeper responsible, made a nest for them after the previous single eggs had been broken due to their poorly constructed nests. Their food consisted of mixed seeds and Orlux softbill food. They did not take any livefood and ignored the fruit and meat provided for the Grey Hornbills *Tockus nasutus* with which they share the aviary.

Two Sarus Cranes *Grus antigone* were reared. We have a pair from Chester Zoo and our own pair consisting of a captive-bred female which is at least 20 years old and a wild-caught male. Each contributed to our success, though all our cranes are fostered now. I believe that we have a good rate of fertility with our Chilean Flamingos *Phoenicopterus chilensis*, with five young being raised from eight eggs. These birds are much admired by the public and I am pleased that we are now breeding them on a regular basis. Lastly, I would mention that two Stone Curlews *Burhinus oedichenus* were hand-reared.

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BREEDING THE PINK-BACKED PELICAN

Pelicanus rufescens

by Paul Wexler

The pelican colony at Longleat Safari Park, Wilts., has been kept successfully for a number of years, but it was not until 1993 that a bird began to show signs of attempting to nest. These early attempts were simply arrangements of twigs on a tree stump in the pond. During July 1994 two platforms were constructed and erected at the edge of the pond, creating a raised connection between the bank and a small island, in the hope that the birds would become familiar with them and start using them as nest sites the following season.

Females indicate their readiness to breed by becoming increasingly red on the legs and inside the gular pouch. This normally reaches its reddest about two to three weeks before mating occurs. In nuptial plumage the females also have a longer crest (on the nape), which the males lack. The males' role initially is to collect nesting material and build the bulk of the nest. Longleat staff help at this stage by collecting bins full of small twigs and unload them at the side of the pond. The male pelicans collect beaksful of these twigs and take them to the nest. Any twigs which fall into the pond are not retrieved and as a result the males may gather twice as much nesting material as they need. The males perform their head bobbing and bill clapping display at the nest, before mating with the females, also on the nest platforms. Pairs which re-nest usually do so on the same nest platforms as they laid their previous clutches.

By September 1994 the birds were investigating their new nest sites and by late November the first clutch of eggs had been laid but all were infertile. At the beginning of December a second female laid an egg, which was abandoned by the female and was subsequently taken away to be artificially incubated. This egg was fertile and hatched, but unfortunately the chick did not prosper, and died after only seven days.

The diet given to the adult pelicans consisted of a twice daily ration of sprats and mackerel scattered across the pond to allow the birds to forage for their food. There is a slow but constant flow of water through the pond so any food which is missed does not accumulate and sour the water. At about six-monthly intervals freshly-netted freshwater fish were released into the pond for the pelicans to feed on in a natural fashion. Although this diet was adequate enough to get the birds to come into breeding condition and to lay eggs, it was later re-evaluated with the aim of increasing the viability of the eggs. To this end, beginning in March 1996, a quarter of a Mazuri fish-eater tablet was placed in the fish. About half of the daily ration was painstakingly prepared in this way.

At the same time it was decided that in the future any eggs laid would be left with the pairs to incubate. However, of the eggs which were laid and incubated by the pairs none were hatched successfully. Although the eggs were known to be fertile, many were cast off the platforms usually by females of other pairs which had already lost their own eggs. Some eggs were developing, one even reached the point of pipping before the chick died inside. Losses were attributed to difficulties during the growth of the embryos, thought to be due to problems with the humidity in the nests.

One or two pairs of eggs were taken from the nests and artificially incubated during 1994 and 1995, but unsuccessfully, these failures again being attributed to incorrect humidity. It was due to this that in June 1996 a pair of freshly laid eggs, the twenty-third and twenty-fourth to be laid, were transferred to Birdworld near Farnham, Surrey, for incubation. Although both eggs were fertile, only one of them succeeded in hatching, after a 33 day incubation period. Of three eggs measured and weighed, the average dimensions and weight were:-

Length	Width	Weight
77.3mm	50.8mm	113.2g

All of the eggs have ranged in weight from 100g-155g. The egg which hatched successfully weighed 124.3g, when laid, and with controlled humidity in the incubator, a steady 11%-15% loss of weight was achieved by day 31. The egg was incubated at a steady 37.5°C (99.5°F) and was turned automatically 96 times a day until the chick had pipped into the air cell of the egg. At this point the egg was removed from the incubator and set in the hatcher, where it was kept at 36.5°C (97.7°F) and was left unturned. On day 32 the first external hole appeared in the shell and within 24 hours the chick had hatched. It was a good, pink colour, and was naked and had its eyes open. It appeared strong and healthy, but probably perfectly naturally, was unable to support its relatively massive head. The chick remained in the hatcher for a further 12 hours and was then moved into a brooder heated to 36°C (96.8°F). The brooder was set with a high humidity, as in the past we had experienced dehydration and dry, peeling skin, with naked chicks.

On hatching the chick weighed 95g. The first feed was attempted on the evening of the first day using liquidised sprat, primarily because this was already prepared for penguin chicks which were being raised at the same time. The chick's head was supported with one hand, while a spoon was used to dribble the food into its throat pouch. Unfortunately, the chick seemed to have difficulty swallowing it and most of it was voided, leaving the chick in danger of suffocating as a result of the liquid food blocking its airways. After gently wiping the inside of the beak clean, it was decided to leave well alone until the following day.

On the second day the chick was fed at two-hourly intervals between 8.00am and 8.00pm. After a rethink about the diet, we tried feeding it small, boned carp, about 3cm (approx. 1¼in) in length. To prepare the meals the fish were first placed in hot water for a few minutes, which made the flesh soft and easy to extract by cutting off the tail and scraping out the body meat with a knife, leaving behind the skin and the bones. With the addition of a little hot water, the resulting moist mash could be fed to the chick, again using a spoon. This worked far better than the first attempt, and the chick expelled some of the excess water from its mouth by squeezing the gular pouch against its neck (in a similar fashion to adult pelicans when they have dredged a beakful of fish and water) before swallowing the food.

The chick's weight increased well over the first week, attaining gains of between 10% and 20% each day. The diet was varied to include chopped pinkie mice and sprats, which were coarsely mashed and mixed with the carp. By day 6 the feeding regime was changed to three-hourly feeds between 8.00am and 8.00pm, and the heating was also changed. The chick was taken out of the brooder and placed under a heat lamp, so that it had fresher air to breathe. Because of the nature of its diet, the aroma in the confines of the brooder was thought not to be hygienic enough.

The young pelican was attempting to feed itself by day 8 and was encouraged to do so. A bowl containing a variety of chopped fish and chopped day-old chicks, dusted with Avimix for calcium and vitamins, was held towards the chick and at the beginning of each feed it confidently (and to its own vocal accomplishment) collected pouchfuls of food without needing too much assistance. Towards the end of the feed however, the food needed to be offered with tweezers, otherwise, over the course of the day, not enough food would be taken to produce a good weight gain. This feeding method was employed for a further few days until the chick was capable of taking all its daily food independently. If it was aided by hand and overfed, any excess food would quickly be voided.

By days 7-10, although it was still bald, white spots were beginning to appear under the skin which slowly over the next week to ten days produced very thick down over the body. Once the growth of down was complete, the chick would easily overheat and so needed regular monitoring. At 14 days old it weighed 800g and was eating about 600g of mixed fish, which were given over the course of four feeds between 8.00am and 5.00pm. Within another week it weighed 1,950g, although it was being fed only about 50g more of food per day. The diet was reduced mainly to sprats and occasionally pieces of day-old chicks. The fish were fed whole, but only after they had been scalded to make them soft.

By day 23 the young pelican was starting to regurgitate and simply

refuse food and consumed only 470g of food on that day, producing a weight gain of 3.2% on day 24, when only 550g of food were eaten. At this point we did not want to make it eat any more than it wanted to, believing that it would regain its appetite when it was ready. Day 25 produced a weight loss of 1.7%, but the appetite had certainly returned and 820g of food were consumed that day and the weight gain was nearly 10%.

On day 27 the chick was returned to Longleat for them to continue the hand-rearing. At this stage it weighed 3,000g and was attempting to walk (for two or three days it had already been able to stand for short periods), but this was very new to it, and was not at first a great success. The flight feathers were just beginning to show, while the only other feathers coming through were the scapulars, but these were still only quills. The transfer was successful and all the information on feeding, weights and notable behaviour was passed on to Mark Tye who undertook the completion of the rearing at Longleat. The feeding continued as it had Birdworld, though with the inclusion after a few days of mackerel. The feeds averaged only 550g of food per day and the weight gains were between 2% and 7%, which were constant until it was 44 days old when the weight had reached 5,100g. Attaining this weight had been fairly slow and many feeds had been refused, sometimes the chick would eat only a single fish at a time, and often feeds would end with the bird going into spasms. This was obviously a worrying time, but with a little research it was found that throwing fits after feeding is really quite 'normal' in wild-reared chicks, even if there is no obvious reason for it.

The weight of 5,100g was maintained for 11 days. The chick was now becoming increasingly well feathered and exercising more, though it spent much of its time resting or sleeping. Water was encountered for the first time at 50 days old, and the experience was not a popular one, in fact it was becoming obvious that any changes in the daily routine were unpopular, but needed to be persevered with in an effort to allow the chick to acquire its pelican personality.

The weight was on the move again by day 54, this time down, the decrease was one of 300g which took five days to achieve, but as food was only being left out for independent feeding and no extra feeds were given, the situation was just monitored, as the bird seemed content and showed no signs of illness. Exercise was encouraged and the young pelican was given increasingly more space to practise wing-flapping. It walked well for long periods and by 60 or so days was becoming more used to water, it was even observed bathing, although water was quite obviously not a favourite medium. Rain was encountered on a few afternoons, again it did not revel in this, but it was useful in that after it became wet it usually preened and as a result the feathers were becoming noticeably more waterproof.

On day 77 the now almost fully feathered pelican was moved to the adult colony on the exhibition pond. For a few weeks each night it continued to be locked in a house within the enclosure and soon learnt to put itself away at night, when the days began to get shorter. Once it was used to the enclosure, it was time for it to start exploring, though it did not take to the water. Instead it was keen to explore the nest platforms and would spend entire days on them. Fortunately, the adult pelicans did not seem too concerned by this.

The most significant points occurred after 100 days, when it was seen swimming without first having to be put into the water and on the following days it also swam and spent time with the adults, without any aggression being shown towards it. It was even seen trying to fish for itself in the presence of the other birds.

With hindsight it would appear that the slow growth rate could be quite normal and the regurgitation and refusal of food was due to accidental overfeeding. It is very difficult to rear species for the first time without being over protective, especially when there are no guidelines to follow. Hopefully, however, the task will now become more fluent and practised. The 'Pelicans of Longleat' continue to lay eggs regularly and in the future there could well be some parent-reared chicks, which I greatly look forward to seeing.

Paul Wexler used to work at Birdworld near Farnham, Surrey, but now works at Chessington World of Adventures, Chessington, Surrey KT9 2NE, England. He believes this may be the first pelican to be raised in the UK.

* * *

The Passerine Taxon Advisory Group (TAG) in conjunction with the Association of British Wild Animal Keepers (ABWAK) is planning a one day symposium to be held on the 19th May 1998, at Bristol Zoo. It is planned to examine the problems, priorities and practical aspects of improving the husbandry and breeding of passerines in captivity, and will also discuss their conservation. The following day, 20th May, will be devoted to pigeons and doves, and will be organised by Duncan Bolton.

Further information about both days can be obtained from:-

Duncan Bolton,
Bristol Zoological Gardens,
Clifton
Bristol BS8 3HA.

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THE VINACEOUS AMAZON *Amazona vinacea* AT LORO PARQUE

by Roger G. Sweeney

The Vinaceous Amazon *Amazona vinacea* formerly occurred across quite an extensive range in the Atlantic forest regions of southern and eastern South America. Its range in Brazil originally stretched from Bahia to Rio Grande do Sul and on into eastern Paraguay and also Argentina. Today the number of Vinaceous Amazons has declined across nearly all of this range, with its last strongholds being in southern Brazil and eastern Paraguay, although small populations can still be found scattered across other parts of its former range. The decline of this species has been partially documented in recent years, but its current status over most of its range is unclear and this should be of great concern. Further field work is needed on the ecology of this species. There is also the need to protect the habitat in the most important regions where the remaining populations live, if the decline of this species is to be slowed down and the wild population is to have a viable future.



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Vinaceous Amazon *Amazona vinacea*

With an adult body length of about 30cm (11¾in), the Vinaceous Amazon is a medium-sized member of the *Amazona* genus with strikingly marked plumage. The basic coloration is green with black tips to the feathers. A red frontal band across the front of the face which connects to the lores (the forehead, lores and chin are red), is one of the main distinguishing features of this species, as is its deep red bill. The most interesting physiological feature is the long erectile feathers on the hindneck which can be fanned to a much greater extent than those of any other *Amazona* species, with the resulting display being very similar to that of the Hawk-headed Parrot *Deroptyus accipitrinus*. The feathers of the upper breast and abdomen are purplish-red (vinous) in colour and provide this species with its common name. This area of vinous coloration is however much reduced in young birds, which fledge with a duller greenish-brown underbody coloration which they retain during their first year. Several adults were weighed at the end of the 1996 breeding season at Loro Parque and showed an average weight of 395g for males and 365g for females, from a sample of four adults of each gender.

Two decades ago, before its placement on Appendix 1 of the CITES Convention, this species was available in aviculture. It was never imported into Europe in very large numbers but nevertheless it was frequently offered for sale. Its price was higher than that for other *Amazona* species available at the time, due to its striking appearance and talent as a mimic. As the trade in wild birds was brought to an end, the captive population declined noticeably. While this species has shown itself willing to breed for those who provide suitable husbandry and have enough individuals to allow natural mate selection to take place, captive breeding has been very disappointing, considering the quantity of birds which were formerly available.

In current day aviculture, there appears to continue to be a significant number of birds kept in Europe. A survey of Amazon parrots in European zoos which was conducted in 1993 and published in 1994 by EAZA, listed 59 Vinaceous Amazons being kept in 11 zoological collections: of these, only three collections, Loro Parque (Spain), Vogelpark Walsrode (Germany) and Beauval (France) had recorded breeding successes. It is known however that a significant number of Vinaceous Amazons are kept by private aviculturists in Europe and if these holders are willing to work in cooperation with an EEP scheme that may be initiated for this species, then the known captive population in Europe might be large enough to be considered as viable.

The husbandry of the Vinaceous Amazon in captivity is similar to that for other species of the *Amazona* genus. At Loro Parque we maintain one pair in a display aviary in the exhibition area of the park, and several more

pairs are maintained in suspended breeding cages in our off-exhibit breeding areas. The suspended breeding cages measure approximately 300cm long x 95cm in both width and height (9ft 10in x 3ft 1½in x 3ft 1½in) and are positioned with the length of the cages extending away from the keeper, and with all servicing taking place at the front. Each cage has the nest-box positioned against the outside back panel, and there is a hole cut in the wire to allow the birds to enter the nest-box. With the nest-box situated on the outside of the cage, this eliminates the need to enter it to service or inspect the nest-box.

The feeding of these birds is undertaken twice a day. At 7.00am they receive their main food dish which contains a mixed salad prepared with the following items:- apple, pear, tomato, beetroot, carrots, alfalfa, lettuce, peppers, papaya and other seasonally available fruits and vegetables; in addition we also use, when available, several fruits which are grown in the park, such as the prickly-pear from cactus plants and the berry from the Queen Palm Tree. A second smaller food dish in the morning provides the birds with commercial dietary pellets, and during the breeding season we also give each pair segments of our own supplement 'cake' which is made fresh daily. The afternoon feed is given at 3.00pm, when a mixture of nuts, seeds and cooked beans replaces the salad dish from the morning.

The Vinaceous Amazon was first bred at Loro Parque in 1990, when a single chick was hand-reared. The pair proved to be very unreliable when it came to incubating their eggs and so have always had their eggs removed for artificial or foster incubation and rearing. This pair of Vinaceous Amazons have on subsequent occasions been given eggs of more common species to give them the opportunity of proving themselves to be good parents, but to date they continue to be unreliable.

No breeding took place in 1991 but the pair did lay again in 1992, when further hand-rearing was carried out and another chick was reared. In 1993 when the same pair laid again, the clutch of eggs was transferred to a pair of Green-cheeked Amazons *A. viridigenalis* which have proved to be excellent foster parents and raised both chicks that hatched. The same technique was employed in 1994, but only one egg from the clutch proved to be fertile and the chick from this was successfully reared by the Green-cheeked Amazons.

In 1995 the Vinaceous Amazons' first clutch was infertile but they produced a second clutch of which one egg was fertile. However, by the time the second clutch was laid they were out of sequence with the pair of Green-cheeked Amazons used as foster parents which had laid earlier and which were by now busy fostering a clutch of Red-browed Amazons *A. rhodocorytha*. Therefore the egg was artificially incubated and the resulting chick was hand-reared. It was fed with Pretty Bird Handrearing Formula

(19% protein and 12% fat) and after the first four weeks switched to a lower fat formula (8%) to prevent it becoming too overweight. The accompanying graph shows the pattern of weight gain by the chick during its first five weeks in the nursery.

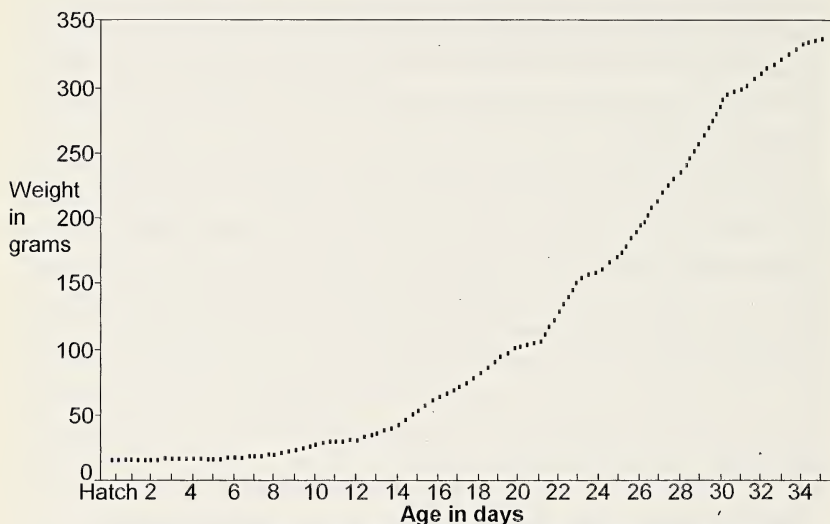


Figure 1. Weight Gain by Vinaceous Amazon hand-reared in 1995

After being weaned the chick was socialised with a group of other Amazons (including the 1994 Vinaceous Amazon chick) and it soon settled into normal patterns of behaviour with no sign of being imprinted. In 1996, the same situation was repeated - by the time the Vinaceous Amazons laid, the foster parents were again busy rearing a clutch of Red-browed Amazon chicks. A single egg was fertile and hatched but unfortunately the chick had severe spinal deformities and was euthanased when it became apparent that the deformities could not be corrected to a degree whereby the chick could live a normal life. On the occasions in 1995 and 1996 when eggs were taken for machine incubation, I measured the external dimensions of several eggs from the same female of which the average dimensions were 45.4mm x 30.3mm.

Up until 1996, all of the chicks had come from one adult pair, but in late 1995 we changed some of our pairing arrangements and this led to the pair of birds in the exhibition aviary breeding for the first time. A clutch of eggs was recorded in the first week of March and by the 31st March two chicks had hatched. This first clutch eventually resulted in four healthy chicks which initially grew and developed well. However, when the chicks were fitted with closed leg bands, we noticed that the older chick emitted a bad odour from its mouth, from which a swab was taken which revealed a

fungal infection. All four chicks were removed from the nest and were treated in the nursery, where they were hand fed until they were weaned.

A second clutch from the exhibition birds was laid on the 25th May and resulted in two chicks the first of which hatched on the 22nd June. As with the first clutch, the chicks were removed from the nest-box after three weeks as a precaution, given the problems previously encountered. On examining the two chicks in the nursery, it appeared that our caution was justified, as one of the chicks showed early signs of a fungal infection. This was treated quickly and no further complications were noted. The source of the fungal infection remains unidentified; both parents have undergone a thorough examination and neither of them appear to be the source of the infection. The nest-box has been replaced and, as is now a precaution with all of our birds which parent-rear their young, the wood shavings inside the nest-boxes are treated with an anti-fungal agent each time the nesting medium is replaced. The rearing of six young from a new pair in 1996 means that once these birds mature we will be able to make up unrelated pairs of first generation Vinaceous Amazons. The hope is that in a few years we will be able to achieve the second generation breeding of this species at Loro Parque.

The Vinaceous Amazon is clearly endangered in the wild and although in aviculture some successful breeding is being achieved, it is unclear how secure the captive population is at the present time. Information from the EAZA survey of European zoos indicates that there should be enough birds in captivity to form a self-sustaining population, but this at present remains only speculation. The Vinaceous Amazon is one of the species which has been included in the EEP Amazon collection planning for European zoos, which identifies this species as one upon which zoos should concentrate their breeding efforts. It has also been urged that this species become the subject of a full EEP (European Endangered Species) programme, but this has so far not materialised. In order to gain a more accurate assessment of the captive status of this and other endangered Amazon species, a survey is presently being carried out by Gustavo Sanchez, a post-graduate biologist working in cooperation with the Loro Parque Foundation. This student is surveying the known European populations of these species so that a detailed demographic and genetic evaluation can be presented to the Psittacine Taxon Advisory Group to accurately identify the immediate priorities. Although this work remains ongoing, it is certain that the Vinaceous Amazon will be one of the highest priorities.

Roger G. Sweeney, who has written about parrots in several recent issues, is the Curator of Birds at Loro Parque, 38400 Puerto de la Cruz, Tenerife, Canary Islands, Spain.

BOOK REVIEWS

The Minds of Birds

How much do we know of what is going on in the minds of birds? I have long been fascinated by this question. Although we can often guess at why a bird has behaved in a particular way, when the behaviour is not instinctive, just what is going through the bird's mind? Undoubtedly many birds can work things out in a subjective way, just as we do - but they do not have a vocabulary of words to help them. When I saw *The Minds of Birds* advertised I sent away for it at once. The author is Alexander Skutch, one of the world's greatest ornithological writers. He has been observing birds for 60 years. If anyone knows what is going on in a bird's mind, it must be him, I thought.

The book is fascinating, yes, but it throws little light on the *minds* of birds. It would have been more aptly titled *The Behaviour of Birds*. As the author admits: 'I regarded their feelings and thoughts as the most important, but unfortunately the most baffling, aspect of their lives. After watching and reading about birds for so many years, I am far less certain of what goes on inside their heads than of what they visibly do...' His chapters describe such aspects as recognition of individuals, memory and anticipation, social life, counting and timing, and the brain and senses. He draws on his own extensive experiences, mainly with Neotropical perching birds, and quotes anecdotes of many other observers.

In the chapter entitled *The Mind of a Parrot*, he describes the much-quoted work of Irene Pepperberg with the now famous Grey Parrot, Alex. There is little mention of parrots elsewhere. His chapter on Emotions might have been filled with anecdotes from bird keepers, many of whom have interesting tales to tell about emotional responses of their pets in certain situations. On the whole his comments on this chapter are confined to wild birds and, for example, their emotional attachment to their nests and young. However, in quoting Cynthia Bluhm's experiments with Canvasback Ducks, he makes a point which aviculturists would do well to remember. So often we expect birds to breed with the partner which *we* choose for them - and often we wonder why the pair shows no interest in breeding.

Cynthia Bluhm had 19 pairs of Canvasbacks which had chosen their own partners, and ten pairs which were separated and given new partners. In addition there were 12 females who had been actively courted but who had not yet indicated their choice of males. Each of the latter was given a drake who had not courted that particular duck. All birds had been raised from artificially incubated eggs. Of the 19 self-formed pairs, 17 soon had eggs. Of the 12 females who had been courted but had not accepted males,

ten co-existed peacefully with the males assigned to them but they did not exchange courtship displays or lay eggs. The females who had been separated from the males they had chosen became extremely aggressive towards their new companions, chasing and pecking them. Five of these unfortunate drakes died as a result. None of the other females accepted the drakes forced on to them. Thus psychic factors inhibited mating in all except the spontaneously formed pairs.

The Minds of Birds is in paperback and hardback, published in the USA by Texas A&M University Press (ISBN 0-89096-759-8); paperback price US\$19.95. In the UK it can be obtained from Natural History Book Service Ltd., 2-3 Wills Road, Totnes, Devon TQ9 5XN, price £18.50 plus £4 post and packing.

Rosemary Low

OISEAUX DE LA RÉUNION

by Nicolas Barré, Armand Barau & Christian Jouanin

This 208-page guide to the birds of the island of Réunion is very comprehensive and informative. It includes not only an extensive list of the birds but descriptions of the terrain, climate, fauna and flora, as well as the evolution of the island. A volcanic island in the southern Indian Ocean, Réunion is the largest of the Mascarene Islands and covers an area of 2,512sq km (approx. 970sq m). Of the 96 bird species found there, only 21 are indigenous, 13 are passage migrants, 19 are occasional visitors and 16 are introduced.

The detailed descriptions of plumage, habitat, nest, status and distribution of all nesting, accidental and introduced species make identification easier. Each species is listed under its scientific, French, English and Creole name. The illustrations are good with the bird shown alongside the text as well as on nine separate colour plates with others of the same family group. The cartoon-like black and white drawings add atmosphere and give a feel of the island. The reproductions of some old plates - five in number and including one of the extinct Mascarene Parrot *Mascarinus mascarinus* - are colourful and show clearly the difference in bird illustrations of today and yesterday.

This is an interesting and informative guide for anyone intending to visit this area but, as the book is entirely in French, a knowledge of the language is necessary.

Oiseaux de la Réunion (ISBN 2-87868-027-8) is published by Les Éditions du Pacifique, 62 rue du Couédic 75014 Paris, France.

Anita Dunstan

VIDEO REVIEW

Hand Rearing Parrots with Rosemary Low & Rob Harvey.

Most aviculturists will be familiar with the names of the presenters of this highly informative video. Rosemary Low, one of the world's leading authorities on parrot-like birds, and Rob Harvey, Curator of Birdworld, well-known for his work on incubation techniques, have put their expertise to good use with the production of this guide to hand-rearing parrots. With a running time of nearly an hour, the video proves an excellent format for displaying the techniques of feeding parrot chicks, providing visual instruction to those who may be new to this area of aviculture.

The video takes the aviculturist through the various stages of hand-rearing, from the initial selection of a suitable brooder to dealing with the more commonly found problems seen in hand-fed parrot chicks. The viewer is shown when, how and what to feed the chick, how to monitor its development and how to tackle the often problematic task of weaning. The importance of hygiene within the nursery area is also suitably stressed, as is the sense of commitment needed to undertake any form of hand-rearing. The video also goes some way towards dispelling the myth that chicks need to be fed every two hours throughout the night, something which is definitely not necessary with the medium to large species, even small species require only one feed during the night for the first few days.

The main advantage of the video format over the written word is that it allows the viewer to actually witness a chick being fed, something which some may find difficult to visualise from the text of a book. It is, perhaps, the next best thing to hands-on tuition.

If there is any criticism of the title it is that breeders, if selling their birds as pets, are advised to sell their youngsters whilst still on one feed, thereby helping to keep the bird tame and encouraging a bond with its new owner. This is a practice which can lead to problems for the inexperienced, and may be disastrous for the bird itself. Otherwise, this is an excellent aid for the would-be parrot rearer, and at only £15.95, represents a valuable addition to the aviculturists' library.

Richard Hughes

This video is available from various outlets, also direct (including post & packing it costs £17.45) from Rob Harvey, Kookaburra House, Gravel Hill Road, Holt Pound, Farnham, Surrey GU10 4LG, England. Tel: 01420 23986/Fax:01420 23078.

Review copies have also been received of three 20-page, colourfully illustrated booklets published by Rob Harvey/Practical Avian Consultants: *Macaws* and *Senegal, Meyer's and Poicephalus Parrots* by Rosemary Wiseman, and *Parakeets* by Kerry Banks, costing £3.00 each, excluding post and packing.

NEWS & VIEWS

INTERNATIONAL PARROT CONVENTION

The 17th-20th September 1998, has been set as the dates for the IV International Parrot Convention, to be hosted by Loro Parque, Tenerife, Canary Islands. Among the speakers who have already confirmed that they will be there are Susan Clubb (USA), Paul Butler (Rare Center, Caribbean), Marc Boussekey (France), Neville Connors (Australia), Frank Lambert (IUCN, Thailand), Theo Pagel (Germany), Catherine King (Holland), Neils Krabbe (Ecuador), Alan Hesse (Bolivia), Armin Brockner (Germany), Regina de Dios-Jardinell (Philippines), and Roger Sweeney, Frank Enders and David Waugh (Loro Parque Foundation, Canary Islands). Enquiries about the convention should be directed to:- The Secretary, IV International Parrot Convention, Loro Parque S.A., 38400 Puerto de la Cruz, Tenerife, Spain. Fax: 34 22 375021/E-mail:loroparque@jet.es.

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HORNBILL LONGEVITY

Michael E. Mace, Curator of Birds at San Diego Wild Animal Park, has written to say that there they have a male Abyssinian Ground Hornbill *Bucorvus abyssinicus* which came to San Diego from Rotterdam in 1951. It is the male of the first pair of these hornbills ever to breed in captivity.

* * *

MERITORIOUS AWARD

Paignton Zoo, south Devon, has received a Meritorious Award from the Federation of Zoological Gardens of Great Britain and Ireland for the significant advances it has made in the husbandry and welfare of the Abyssinian Ground Hornbill *Bucorvus abyssinicus*. To date five Abyssinian Ground Hornbills have been bred at Paignton Zoo. The eggs are incubated by a bantam until shortly before they are due to hatch, when they are transferred to an incubator. The chicks are hand-reared by Jo Gregson, Senior Keeper of Birds, who described breeding this species in the *Avicultural Magazine*, 100, 4: 221-223.

* * *

JAPANESE WAXWING BRED IN UK

Cage & Aviary Birds (13th September 1997) reproduced a colour photo of an adult and a young Japanese Waxwing *Bombycilla japonica*, bred by Martin Stephenson of Tyne and Wear, who believes he may be the first person to have bred this species in the UK. The incubation period was 15 days.

* * *

BIRD GARDEN TO CLOSE

Merley Bird Garden near Wimborne, Dorset, is closing after 30 years. From a peak of 150,000 visitors a year in the 1980s, the number of visitors has fallen to about 50,000 a year. The closure has also been blamed on a break-in earlier this year when birds worth £20,000 (approx. US\$ 12,500) were stolen. The present stock, which includes a flock of Humboldt Penguins *Spheniscus humboldti*, will be auctioned and the house and walled garden returned to private use. *The Daily Telegraph* newspaper headlined its report: - 'Sale of wildlife park means penguins are going cheap.'

* * *

NO MAGIC NEEDED TO BREED HUMMINGBIRDS

'If you comply with the correct conditions there is no magic needed to breed Hummingbirds' wrote Jac Roovers in *Cage & Aviary Birds*, 21st June 1997. His hummingbird accommodation (in Teteringen, in the Netherlands) measures 17m x 3m (approx. 56ft x 10ft), with the main room divided into 20 small aviaries, each measuring 115cm sq x 225cm high (approx. 3ft 9½in sq x 7ft 5in high), and serviced from a central corridor. In these aviaries Jac Roovers has succeeded in breeding the Violet-bellied Hummingbird *Damophila julie*, Amazilia Hummingbird *Amazilia amazilia*, Fork-tailed Woodnymph *Thalurania furcata* and Violet-tailed Sylph *Agelaiocercus coelestis*. He believes he is the first to breed the last two in captivity, and is convinced that in time he can achieve more first breedings with hummingbirds. One of the secrets of his success may be that he lets the male in with the female just long enough for them to mate a few times, then opens the hatch again and allows the male to fly back to his own aviary.

* * *

BIRDS OF PREY AND OWLS CONFERENCE

The V World Conference on Birds of Prey and Owls, will take place 4th August - 11th August 1998, in Midrand, Johannesburg, South Africa. It is being hosted by the Raptor Conservation Group and Vulture Study Group of the Endangered Wildlife Trust. Further information is available from: - Mr Robin Chancellor, Hon. Secretary of the World Working Group on Birds of Prey and Owls, 15b Bolton Gardens, London SW5 OAT, UK. Fax: Int+44 171 370 1896; Dr Bernd-U. Meyburg, President of the World Working Group on Birds of Prey and Owls, Wangenheimstrasse 32, 14193 Berlin, Germany. Fax: Int+30 892 8067/E-mail: wwgbp@aol.com ; or Dr Gerhard H. Verdoorn, Chairman of the Raptor Conservation Group, P.O. Box 72155, Parkview 2122, Johannesburg, South Africa. Fax: Int+27 11 646 4631/E-mail: neshar@global.co.za.

* * *

ON BREEDING LOAN

Michel Klat, the owner of the Old House Bird Gardens Breeding Centre in Berkshire, has decided to concentrate on his pheasant collection, and is therefore placing his magnificent collection of touracos and curassows on breeding loan at Birdworld near Farnham, Surrey. The collection is made up of 16 species of touracos, including the Great Blue *Corythaeola cristata* and Ross's Touraco *Musophaga rossae*, and seven species of curassows. Altogether there are over 41 pairs of birds of which most are breeding pairs.

* * *

THE BREEDING SEASON AT LORO PARQUE

By the second week of June, over 500 chicks of more than 100 different taxon had already been hatched. The two main highlights of the current breeding season at the time Roger G. Sweeney wrote, were the first successful breeding of the Plum-crowned Pionus *Pionus tumultuosus* and the Blue-eyed Cockatoo *Cacatua ophthalmica*. 1997 has also seen the first stage of the relocation of the majority of the breeding birds to a new breeding centre, and it is pleasing to see that so far this has not affected the high levels of breeding success which have been enjoyed in recent years.

The Musk Lory *Glossopsitta concinna* has for several years been in the collection of the Loro Parque Foundation, but it is not until this year that the first chicks have been produced. There had been several clutches of infertile eggs until some of the pairing arrangements were changed last winter. Other significant *Loriidae* species to be reared again include the Red and Blue Lory *Eos histrio*, Mount Apo Lorikeet *Trichoglossus johnstoniae*, Weber's Lorikeet *T. haematodus weberi*, Streseman's Lorikeet *T. h. stresemanni* and Josephine's Lorikeet *Charmosyna josefinae*.

The cockatoo breeding season has included Loro Parque's first breeding of the Blue-eyed Cockatoo, as mentioned earlier. Offspring have also been produced by the Gang-gang Cockatoos *Callocephalon fimbriatum*, Red-vented Cockatoos *Cacatua haematuropygia*, Major Mitchell's Cockatoos *C. leadbeateri*, Ducorp's Cockatoos *C. ducorps*, Western Long-billed Cockatoos *C. pastinator*, Slender-billed Cockatoos *C. tenuirostris*, Moluccan Cockatoos *C. moluccensis* and Citron-crested Cockatoos *C. sulphurea citrinocristata*, to name some of the more important species.

The Asian Blue-rumped Parrots *Psittinus cyanurus* which bred for the first time at Loro Parque in 1996 have again produced young, as have a number of other important Asian species, such as the Blue-naped Parrots *Tanygnathus lucionensis*, Blue-backed Parrots *T. sumatranus*, Green-winged King Parrots *Alisterus chloropterus moszkowskii* and Plum-headed

Parrakeets *Psittacula cyanocephala*. The New Caledonian Horned Parrakeets *Eunymphicus cornutus* have again produced a single chick, with a reliable pair of Moustached Parrakeets *P. alexandri* making perfect foster-parents for it. The African species which normally breed slightly later than the rest of the psittacine collection in Tenerife were only just beginning breeding, with a number of pairs of Vasa Parrots *Coracopsis vasa* nesting and all of the *Poicephalus* spp. having chicks.

The macaws, *Aratinga* and *Pyrrhura* conures were all well into the breeding season with many young being reared. The most important species rearing young included Hyacinth Macaw *Anodorhynchus hyacinthinus*, Blue-throated Macaw *Ara glaucogularis*, Red-fronted Macaw *A. rubrogenys*, Illiger's Macaw *A. maracana*, Blue-throated Conure *P. cruentata* and Crimson-bellied Conure *P. perlata perlata*. The main hope was to see a serious breeding attempt by the Spix's Macaw *Cyanopsitta spixii*, which remains the collection's single most important species. All three pairs of Hoffman's Conure *P. hoffmanni*, sometimes called the Sulphur-winged Conure, have settled in well after their arrival earlier this year from the USA, but are probably too young to breed.

Roger Sweeney's personal highlight of the year so far, had been the hatching of two Plum-crowned Pionus chicks, which were being reared by an experienced pair of Maximilian's Parrots *P. maximiliani*. The placement of the eggs with foster-parents was undertaken as a precaution because of the importance of breeding the Plum-crowned Pionus and because the natural parents lacked previous experience. It is also pleasing to report that the pair of Plum-crowned Pionus were given eggs of Maximilian's Parrot and succeeded in rearing a chick. It is hoped that next year the pair of Plum-crowned Pionus can be left to rear their own offspring now that they have shown that they are capable of doing so.

The Amazon parrot breeding season was also very much underway, with a large number of young birds being reared from a variety of important species which included the Red-browed Amazon *Amazona rhodocorytha*, Vinaceous Amazon *A. vinacea*, Red-spectacled Amazon *A. pretrei*, Yellow-faced Amazon *A. xanthops*, Lilacine Amazon *A. autumnalis lilacina*, Green-cheeked Amazon *A. viridigenalis*, Yellow-shouldered Amazon *A. barbadensis*, Bodin's Amazon *A. festiva bodini* and Yellow-headed Amazon *A. oratrix*. One pair of Red-tailed Amazons *A. brasiliensis* had again laid eggs, but so far all had proved infertile. A species which is high on Loro Parque's priority list, the Purple-bellied Parrot *Triclaria malachitacea*, had fledged young and it was hoped that as the current breeding season progressed there would be further successes with many of the species mentioned above.



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It was hoped to publish in this issue details of next year's social meetings, but to date it has not been possible to finalise the details. We are trying to arrange a visit to see the bird collection at the Natural History Museum at Tring, in late January or early February, and a visit to Paultons Park, Romsey, Hants., on 4th April 1998. Hopefully the full details will be published in the next magazine, along with details of other meetings in 1998.

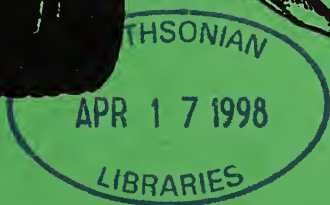
The Society is extremely grateful to Dr. H. Quinque, of France, a Vice President of the Avicultural Society for his most generous donation. Part of the money is being used to pay for colour photos in this year's magazines.

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THE AVICULTURAL SOCIETY

The Avicultural Society was founded in 1894 for the study of British and foreign birds in freedom and captivity. The Society is international in character, having members throughout the world.

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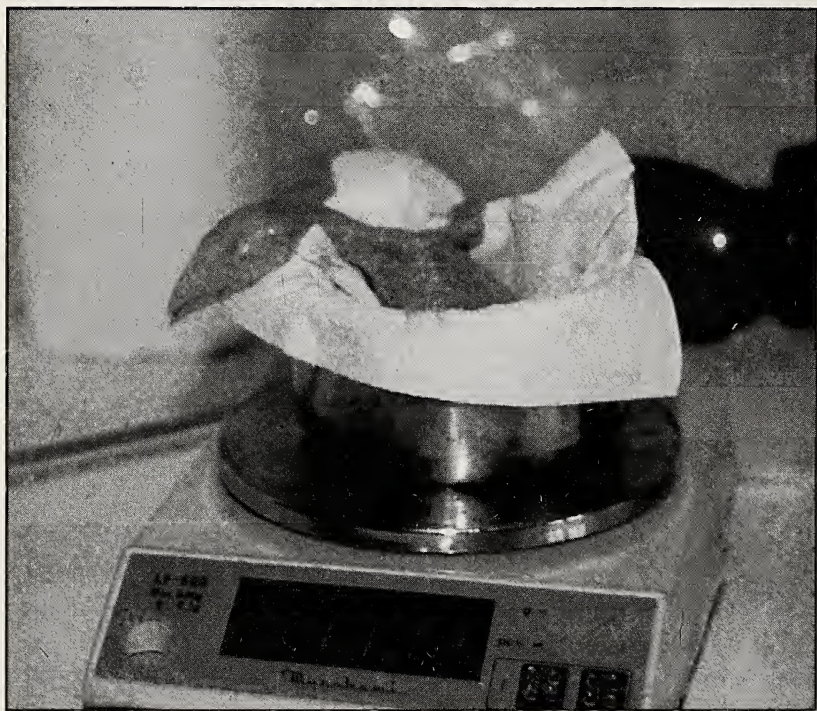
PARENT REARED TOCO TOUCANS AT LEEDS CASTLE

by Laura Paterson

The Toco Toucan *Ramphastos toco* is one of the most popular and well known species of birds, no doubt due here in Britain to a previous well known advertising campaign for a popular brand of Irish stout. Despite the Toco Toucan's popularity, however, very few of the 41 species of toucans are represented in aviculture. The Toco is the largest and possibly the most striking, with an enormous colourful bill, a white or pale yellow bib, a white rump and red crissum.

In February 1989 Leeds Castle purchased a pair of Toco Toucans for its newly opened memorial aviary. The aviary design comprises a planted outside flight and a smaller inside shelter with a tubular heater and a light on a timer for extended feeding hours. In late April three nest-boxes were installed, two in the flight and one in the shelter. They measured 15in sq x 25in high (38cm sq x 63.5cm high) with an entrance hole 7in (18cm) in diameter. Although interest was shown in the boxes initially this soon waned and no attempt at breeding occurred until 1991. When preparing the nest-boxes that year we considered changing the style or positions of the boxes in order to generate more interest from the toucans. David Frank, our Curator at that time, suggested placing cork tiles over the entrance holes. The theory behind this being that the birds' natural curiosity would call for a close inspection of this new feature whilst at the same time, by picking off the cork from the holes, the birds' nesting behaviour would be stimulated. The response to the cork tiles was immediate and both the male and female quickly began to remove the tiles from all three nest-boxes. The female kept returning to one particular box throughout this period and was soon seen hopping into the box and banging on the wooden interior. This behaviour continued for about two weeks, until the beginning of June, when the female was no longer seen in the aviary. The male was watched closely and he repeatedly flew up to the nest-box entrance and looked into the box. Later that day the female was seen in the flight, but returned to the nest almost straight away. On closer observation it became clear that the female was going in and out of the nest frequently throughout

the day, often in response to some noise or disturbance. The particular problem we faced was that Leeds Castle is a landmark used by the MOD (Ministry of Defence) for low flying aircraft which caused the female to bolt out of the nest-box. Unfortunately, by the time we decided to remove the eggs for artificial incubation, both eggs had already been smashed inside the box.



David Frank

Hand-reared chick being weighed in 1992

In 1992 a single egg was laid in the same nest-box and the decision was taken to remove the egg for artificial incubation. In its place we put a dummy egg which the female accepted, and she continued to sit. The original egg was fertile and we decided to attempt to reintroduce the egg once internal pip had been achieved. Unfortunately, the period between the internal pip and the hatch was so quick that the opportunity was missed and the chick was hand-reared.

Someone once said to me that if you have a healthy pair of birds which are not breeding successfully the problem is you. I firmly believe that this is true - either the birds are not being given what they require to make them feel secure or some other factor is missing. It took us the next two seasons

to get to the bottom of the problem of the female bolting out of the box and smashing her eggs. The solution, when it eventually occurred to us, was incredibly obvious. If we heightened the box and hung it at an angle of approximately 45 degrees, the female had the security of being much farther from the entrance hole and if she wanted to exit the box, did not have to jump, but simply hop up the incline to the hole.



Mark Bailey

Young Toco Toucan hatched at Leeds Castle in 1995

In 1995, a box of this design was erected in the aviary, again with cork covering the entrance hole. Immediately interest was shown by both the male and female and the cork was completely removed within an hour. On the 4th June the female went into the slanting box and remained there all day. The following day she came out of the nest-box when the keeper was feeding the birds, but returned to the nest straight away. Disturbance was kept to the minimum at this stage and the box was not inspected so as not to risk putting the female off. Gradually she became more confident and would simply come up to the entrance to see what was going on, then return to her eggs.

On the 22nd June egg shell was found on the aviary floor and on

inspecting the nest, which the female allowed me to do without panicking, two chicks approximately one to two days old were seen. Preceding the hatching of the eggs a great deal of thought had gone into whether to feed extra protein for the growing chicks or to simply continue with the 90% fruit diet. It was agreed that extra protein should be offered and it should be left to the parents to make their own selection of food items. The following day locusts were offered to the parents and were accepted readily and taken into the nest-box. On day three the diet of mainly fruit was supplemented with balls of minced meat rolled in insectivorous mix, again these were taken in preference to anything else and appeared to be regurgitated by the parents and fed to the chicks. At this stage it was common for both of the parents to be in the nest with the chicks, with the male taking over much of the brooding. By the 4th July the chicks were growing well and becoming more vocal. By the 20th July the quantity of food consumed by the Tocos had doubled, we had not however increased the amount of animal protein. One of the young was first seen looking out of the nest-box on the 1st August. Except for the black feathering it was quite pale in colour and resembled a toy more than a real toucan. Two weeks later the first youngster (at eight weeks old) left the nest and the second followed the next day.

The first few days after fledging the young persistently begged for food from the parents, but quickly began picking up and playing with food items themselves. At this stage they were fed no meat or livefood whatsoever, just soft exotic fruit and insectivorous mix at the ratio of four parts fruit to one part insectivorous mix. The young were extremely playful and active and no aggression was shown towards them by the parents. They remained together for approximately seven months.

Shortly after bringing the young in for sexing one died. We had a post mortem performed and the cause of death was confirmed as pseudotuberculosis, probably the biggest killer of toucans in captivity. As a precaution the other youngster (which went on to be reared successfully) was treated with an antibiotic, as it was assumed that it too had been exposed to the same bacteria. During the post mortem it was also noted that the dead bird had a high level of iron in the liver, which although it had not caused the death of the bird, may have been a contributory factor. The insectivorous mix has now been replaced by low iron fruit pate.

It is difficult to draw too many conclusions from the death of a single bird, however, in retrospect it may be wise in future to reduce the animal protein offered to the chicks at a much earlier stage in their development.

Laura Paterson is the Curator of Birds at Leeds Castle Enterprises Ltd., Leeds Castle, Maidstone, Kent ME17 IPL, England.

THE RED-SPECTACLED AMAZON *Amazona pretrei* AT LORO PARQUE

by Roger G. Sweeney

The Red-spectacled Amazon is a fairly small member of the *Amazona* genus measuring 31cm (12¼in) long (Forshaw, 1989). Several adults were weighed at Loro Parque, and the mean weight for this species was 276g (range 252 - 301g), with no clear difference between the sexes. In appearance it is very similar to the closely-related Tucuman Amazon *Amazona tucumana*, indeed many people still prefer to treat them as being conspecific. Both species have mainly green plumage, distinctly edged with black. In the Red-spectacled Amazon the entire forehead and crown is red, which extends around the periphthalmic regions and provides this species with its common name. There is also red on the thighs, bend of the wings and primary flight feathers. The amount of red present around the periphthalmic region and down the bend of the wings provides a good guide to the gender of the birds once they are mature. While this is not definite sexual dimorphism, it is normally true that the male has much more extensive red coloration than the female. The Tucuman Amazon by comparison, can be clearly separated in appearance by having only the forehead and forecrown red and while it does have red primaries, it lacks the strong red coloration on the bend of the wings. From personal observations of captive birds I find the personality and behaviour of these two species to be quite different, although these observations have still to be quantified by further study.

The Red-spectacled Amazon has always been extremely rare in captivity outside South America and is regarded as endangered in its natural state. The most comprehensive study of the Red-spectacled Amazon in the wild was published in 1994 and summarised the results of an intensive two-year field study (Varty et al., 1994). The authors estimated a wild population of between 7,500 and 8,500 birds. This population is now almost entirely confined to the Brazilian state of Rio Grande do Sul. Although it is recorded in various forested areas within its range, the species is found mainly in areas of Acaucaria forest (Varty et al., 1994) and to a lesser extent in deciduous and Atlantic forest. The wild population is still considered to be declining at present but active *in-situ* conservation initiatives now being planned may ensure that the population can be stabilised in the short term, and in the long term population growth may allow this species to return to some of its former locations from which it has disappeared in recent decades.

At Loro Parque one pair of young Red-spectacled Amazons are kept in an exhibition aviary in the public area of the park, while several more pairs are maintained in suspended breeding cages in the off-exhibit breeding areas of the collection. The exhibition aviary is of an open design, made mainly of wire mesh panels secured to a metal framework, as can be seen in the accompanying photograph of our exhibition *Amazona* aviaries. Each one is surrounded by dense Arreca Palms to act as a vision break around three sides of the aviary, allowing the birds to be seen only from the front. The suspended breeding cages used in the off-exhibit breeding areas measure 300cm in length and 95cm in both width and height (approx. 9ft 10in x 3ft

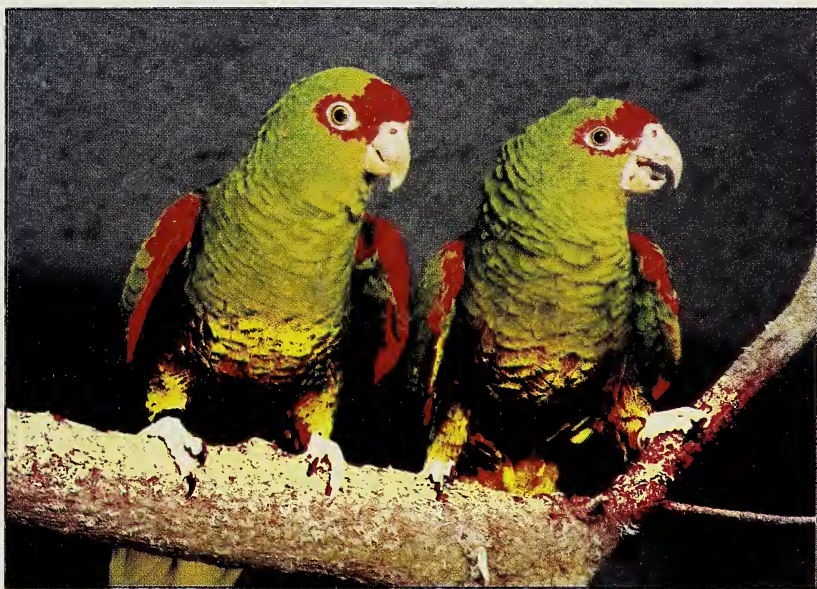


Exhibition aviaries for *Amazona* species

1½in x 3ft 1½in). The cages are suspended above the ground with the base of each cage approximately 125cm (4ft 1¼in) above the pathway, which allows the inhabitants of the cage to perch just above the head height of the keeper. The Canary Islands have a sub-tropical climate and every cage in the collection has a shower system included in the design which is turned on for a 15 minute period each day in the late morning or early afternoon.

In the morning at 7am each adult pair receive approximately 90g of a mixed salad which contains apple, pear, orange, carrot, banana, chard, watercress, red pepper, beetroot, tomato, papaya, fruit of the Queen Palm

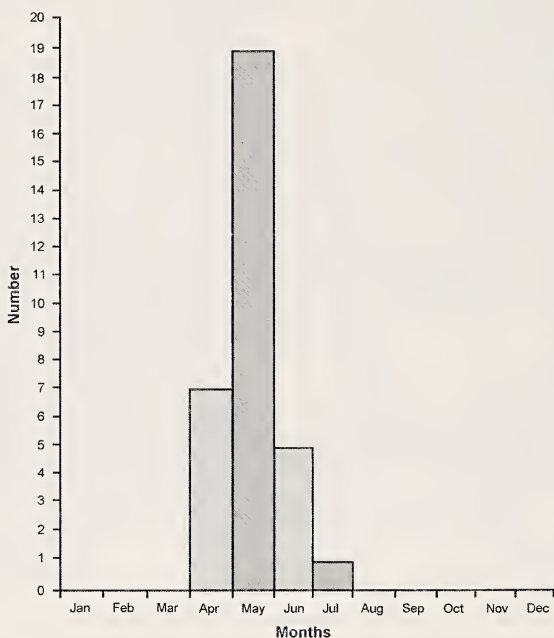
and other seasonally available items. Also in the morning each pair is given approximately 30g of a commercial pelleted food. In the afternoon at 3pm the second feed of the day is provided which consists of about 80g of a mixture of cooked beans (pulses), corn, lentils, sunflower seeds, millet, oats and mixed smaller seeds. Drinking water is supplied fresh from a purified source which is prepared by first being chlorinated then passed through a reverse-osmosis machine and finally through an ultra-violet light steriliser.



A pair of Red-spectacled Amazons at Loro Parque

The Red-spectacled Amazon has been part of the collection at Loro Parque since the early 1980s, however, the first breeding was not recorded until 1990 when a single chick was reared. In the same year the nearby collection at Palmitos Park on Gran Canaria also recorded its first successful breeding (Low, 1991). Following the initial breeding at Loro Parque in 1990, a population of 26 birds has been built up in the past six years. Elsewhere in Europe this species is seldom seen in aviculture; three other zoological collections currently keep this species - Vogelpark Walsrode and Dresden Zoo in Germany and Palmitos Park in Spain. Breeding has now been recorded at both Palmitos Park and Dresden Zoo, while the birds at Walsrode have laid eggs but have not yet reared young. The general population trend is therefore now moving very positively upwards. As a

species, the Red-spectacled Amazon is a lively and active member of the *Amazona* genus and in common with many of the smaller-sized *Amazona* species, it also demonstrates a strong instinct to breed in captivity. It is interesting to observe that many parrot species at Loro Parque seem to undergo a much extended breeding season, probably due to the constant sub-tropical climate of the Canary Islands. Species of the *Amazona* genus are however still quite seasonal in their breeding behaviour and the Red-spectacled Amazon has a very clear breeding season with 32 hatchings recorded in Europe in the past six years taking place between April and June, and just a single hatching recorded in early July.



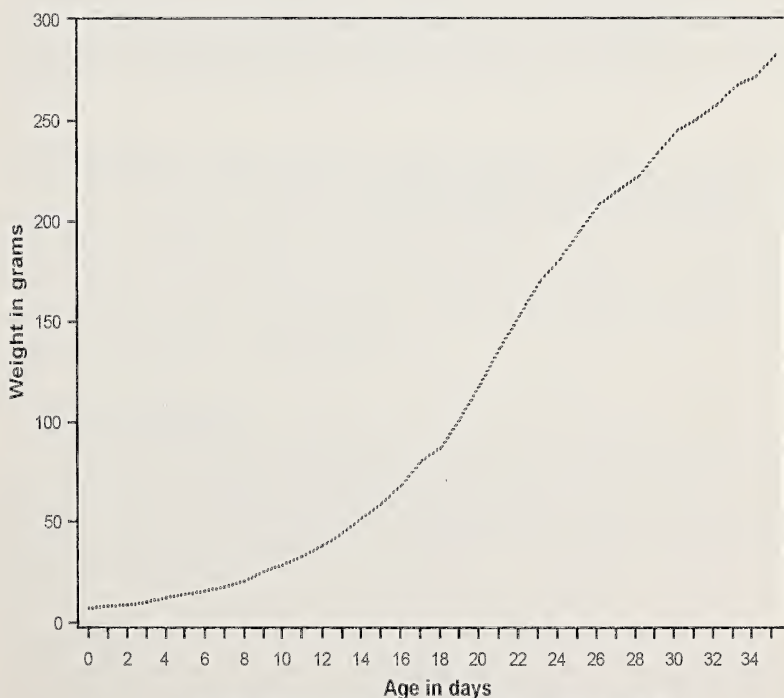
Seasonal hatching of Red-spectacled Amazons in Europe

The clutch sizes recorded from birds at Loro Parque are relatively large for an *Amazona* species, with an average of four eggs per clutch (range 3-6 eggs). One breeding pair at Loro Parque succeeded in hatching six chicks from each clutch for the last two years. Reports from wild nests (Varty et al., 1994) state that between 2-4 chicks were normally found.

At Loro Parque, on occasions when large clutches are laid and confirmed as fertile, one or two eggs are removed to leave the parents with no more

than a potential four chicks. We have seen signs of parental aggression in this species which, when the number of chicks being reared is reduced, does not occur. The incubation period is 26 days, with the main incubation being undertaken by the female. Egg dimensions were calculated from a sample of 16 eggs laid by four different females at Loro Parque. These produced the mean measurement of 34.3mm x 26.5mm (range 32.8mm - 36.0mm x 23.7mm - 28.9mm).

Newly-hatched chicks normally weigh between 6-7g and growth development is quite rapid with parent-reared chicks fledging from seven weeks onwards. Upon fledging, the chicks are clearly identified as immature as, compared to their parents, they have much reduced red coloration on the crown of the head and on the wing feathers. In the last three years, nearly all the Red-spectacled Amazon reared at Loro Parque have been either parent-reared or foster-reared by other closely-related *Amazona* species; only once in 1996 did a chick have to be hand-reared from hatching. This chick was hand-reared successfully in our nursery department, where it was fed on Pretty Bird hand-rearing formula and its pattern of weight gain development during the first five weeks of its life is illustrated in the accompanying graph.



Weight gain by Red-spectacled Amazon chick in 1996

As the captive population of the Red-spectacled Amazon continues to grow in Europe, it is likely that soon more zoological collections and aviculturists will have the opportunity to keep and breed this species. An unofficial studbook is already in operation between the four European collections which keep this species (Loro Parque, Palmitos Park, Dresden Zoo and Vogelpark Walsrode) and this may now receive official backing from the European Association of Zoos, as the population of Red-spectacled Amazons continues to grow and be placed in a larger number of specialised collections. Apart from the species visual attractiveness, its lively behaviour and willingness to breed will without doubt ensure that any birds which become available will be greatly sought after. However care should be taken, at least in the near future to ensure that only collections willing to participate in cooperative management of the species be given first option to work with the Red-spectacled Amazon, as the current genetic status of the population is bias towards the offspring of three or four highly successful pairs.

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EVALUATION OF PAIR-BOND STRENGTH IN CRANES AT THE INTERNATIONAL CRANE FOUNDATION

by Jeff Gerencser

To have a successful captive crane breeding programme requires that crane pairs exhibit a strong pair bond. Without this critical component, a pair is not as likely to put effort into territorial vigilance. Without strong territoriality, the likelihood of the female going into reproductive mode is greatly reduced. Why would cranes invest so much energy into breeding and then chick rearing for several months if they did not have a secure territory from which to guarantee the transmission of their genes? At the International Crane Foundation (ICF) we look for clues which tell whether or not a pair of cranes shares a strong pair bond. You know it when you see it usually, but by using several different indicators one can be more confident in gauging pair-bond status, when to split up pairs, and when to leave them alone.

Pair-Bond Strength Indicators

The following is a short list of indicators of strong or at the least healthy developing pair bonds. The more that all indicators are noticed, the more confident one can be of the pair-bond strength needed for successful egg-laying.

Unison call

An antiphonal (back and forth) duet between male and female. The male emits one note to the female's one, two or three notes depending on the species. Heads usually are tilted up, primaries may be drooped in the male. This is a territorial proclamation which also serves to reinforce pair-bond strength following copulation. This is the surest sign that a pair shares a strong pair-bond (Figure a).

Territorial vigilance

Of the 42 crane pairs currently on site, the most successful and consistent egg-laying pairs exhibit strong territorial defence. This includes charging into pen fences, following aviculturists along the pen perimeter or attacking them. Others may only resort to a combination of postural threats (Figure b) or the unison call.

Contact call

A soft 'prrt' sound made without opening the beak. This is an occasional call within the pair, often emitted when engaged in activities such as foraging

or if there is a disturbance on which both cranes are focused. It is a feedback mechanism where each bird constantly keeps the other bird abreast of its immediate proximity.



Figure A. 'Unison Call' in Eurasian Cranes *Grus grus*

Drawing by Jeff Gerencsek.

Proximity

A strong pair spends the great majority of time within a short distance of each other. This is true for all 15 species of cranes. A pair is strongest this way, especially when one bird can back up and defend the other, their territory or chicks. Another reason they may stay so close to each other is that a lone bird might otherwise appear to be a single bird in need of a mate. This would create an opportune moment for an outside single bird looking to 'hook up'. This explanation of close proximity is plausible considering events in the wild. Nesbitt (1987) documented a wild female Sandhill Crane *Grus canadensis* harassing an already established pair from the edge of their territory. She followed by attacking the female and then soliciting the male in precopulatory fashion. This attempt to gain a mate, and presumably its territory, seems to occur more often to pairs with weak pair bonds or low nesting success - two related factors. The mean distance

between males and females at ICF is around 2m (6ft 7in). They are usually about 1m - 1.5m (1ft 3in - 4ft 11in) apart during activities such as territory defence, roosting, loafing, preening, foraging, and dancing.



Figure B. 'Threat Walk' in Whooping Crane *Grus americana*. Inclusive in this threat are:- a) bill pointing down, b) expanded crown, c) raised tertial feathers.

Drawing by Jeff Gerencsei.

Dance

The general public understands dance behaviour to be a 'mating ritual'. It is associated with mating, but also may serve other functions. Dance in cranes is largely a string of threat behaviours thrown together in such a way as to express nervous tension or elation depending on the circumstances. A strong pair will exhibit dance often, with both birds participating freely and neither bird controlling the dance through intimidation. If there is little or no dancing (look for it especially after sunrise or in the evening), this is not suggestive of a strong pair bond. But, just because a pair may dance often, it does not mean that the pair will necessarily experience reproductive success either.

Location Call Test

Looking at just one of the criteria listed above may not give an accurate description of pair bond strength. It is best to closely observe all aspects of a crane pair-bond. If one feels that a certain pair does not share a strong pair-bond based on the above criteria, they can to a degree, measure pair bond strength with the 'location call test'. In this test, the male and female cranes are separated from each other. One of them is placed in a pen neither immediately adjacent to the original pen, nor out of auditory range. During this process, make sure there are no other nearby stressors which may affect each bird, such as visual access to other cranes. After giving the cranes several minutes to calm down, listen for what is called the 'location call'. This is a single note call sounding similar to a guard call (listen for the guard call when a crane has been startled and exhibits alert behaviour, yet still cannot identify or locate the source of disturbance). In *Grus* sp. the location call is usually slightly longer and more drawn out than the guard call. If neither bird location calls, the bond is probably not that strong. If only one bird emits the location call to try to find its mate, one may infer that the cranes probably do not feel the same way about each other, for this is not a strong pair bond characteristic. Look also to see if a calling bird is frantically pacing its pen to try to get closer to its separated mate. If this is not the case, review the pair with regard to the other pair-bond indicators to decide whether it is worth keeping the pair together. The location call test is used at ICF usually as the last test to confirm or refute what we have already been thinking about the pair-bond of a particular pair. If both birds appear to be desperately trying to get back to each other and are also location calling, we will place them back together and re-evaluate in a few months. The location call test may possibly even strengthen a pair bond upon repairing both cranes, though we have not experimented with this theory.

Using the above criteria and the location call test, ICF has been successful in managing pairs towards maximum breeding potential by splitting up those with questionable pair-bonds and repairing them. At the same time we are assured that we are not simply splitting up a promising pair which may only need more time to fully exhibit all indicators of a strong pair bond.

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CONSERVATION ON THE SANGIHE AND TALAUD ISLANDS

by Jon Riley

Indonesia is a biodiversity hot spot. It has the world's fourth most diverse avifauna and the dubious privilege of being ranked first in global terms with respect to the number of threatened species it supports (Collar et al., 1994). Perhaps one of the most important areas for bird conservation in Indonesia is the Sangihe-Talaud Archipelago, which stretches north from Sulawesi in central Indonesia towards the Philippines.

Over the last three years I have organised Action Sampiri, an Anglo-Indonesian project that has gathered basic biological information from Sangihe and Talaud and sought to use this information to develop a conservation education-awareness programme. The project takes its title from the local name of the beautiful Red and Blue Lory *Eos histrio*, one of six bird species that are found on Sangihe and Talaud and nowhere else in the world (Riley, 1997a).

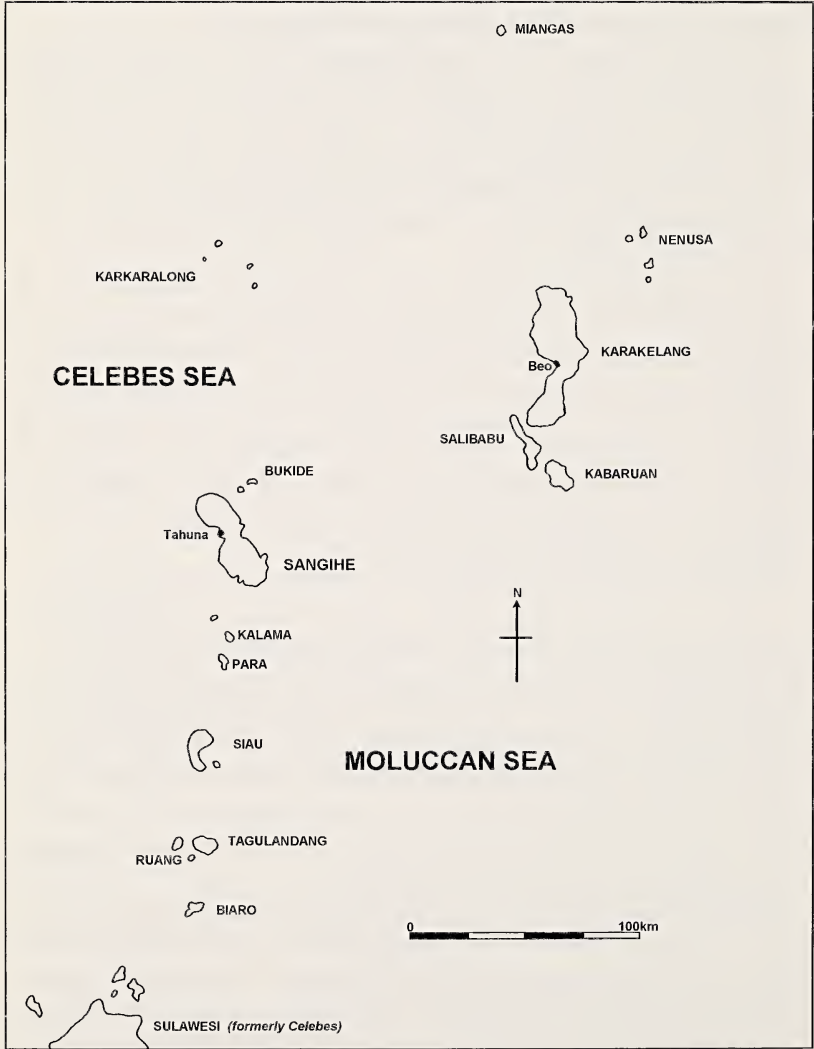
Prior to Action Sampiri, there was a paucity of information about the islands and their birds. Few biologists had reached this remote area, the northern extremity of Indonesia. What little information that existed often originated from the last century; recent, reliable data were lacking. However, analysis by Birdlife International, the global conservation organisation, suggested that seven bird species found on Sangihe and Talaud were threatened with extinction (Collar et al., 1994). In 1992 the islands were designated an Endemic Bird Area (EBA) highlighting their global conservation significance (ICBP, 1992).

In 1995 Action Sampiri mounted a successful six month expedition to the islands which gathered baseline data and investigated the need for practical conservation initiatives. The main conclusion of our 1995 work was that all endemic species were probably extant, although facing immense pressures to their survival. Using this information, and data gathered by other workers, we planned a second project between October 1996 and April 1997. This unique and ambitious proposal aimed to combine further research into threatened bird species and their habitats with community-based conservation work to increase awareness amongst local people of conservation issues on Sangihe and Talaud.

Our primary goal was to try to ensure the continued existence of the islands' endemic birds and their forest habitats. Action Sampiri piloted many new ideas and tried to find effective methods to raise public awareness about, and concern for, the islands' special birds. Plans were constantly revised in light of responses to our activities, new ideas from team members

and new information resulting from research. The project attempted to adopt a 'bottom up' approach, letting the community play a central role in conservation on the islands, rather than leaving solutions in the hands of outsiders.

In 1996/1997 research focused on three key sites identified in 1995 as priority areas for bird conservation on the islands. Results were exciting: we confirmed the presence of all threatened bird species and provided evidence confirming the existence and validity of a sixth endemic species.



BIRD SPECIES ACCOUNTS

A total of 156 bird species have been recorded within the Sangihe and Talaud EBA to date (White & Bruce, 1986; F. Lambert *in litt.* 1996; Riley *in press*), 111 on Sangihe, 79 on Siau and 123 on Talaud. Nineteen species are listed as threatened, near-threatened or restricted-range (ICBP, 1992; Collar et al. 1994; Stattersfield et al. 1997) and a brief summary of their status is included below.

CRITICAL

Caerulean Paradise Flycatcher *Eutrichomyias rowleyi*

One possible sighting was made at Talawid in northern Sangihe (see Riley, 1997b). A bird was observed by a single observer in forest edge slash and burn cultivation scrub on 11th September 1995 at c.240 m. (approx. 790ft). The site was revisited in October 1995 and December 1996, but the bird was not relocated.

Sangihe Shrike-thrush *Colluricincla sanghirensis*

Previously known from two specimens treated with caution by White & Bruce (1986), and unpublished material collected by F. G. Rozendaal in 1985 (R. Dekker *in litt.* 1997). At two locations above c.850m (approx. 2,800ft) on the volcanic caldera of Gunung Sahengbalira in southern Sangihe, groups of up to 15 birds were observed on ten dates in October-December 1996. Vocalisations were tape-recorded; a bird was mist-netted, photographed, blood samples taken for DNA analysis, and a specimen prepared which has been deposited at the Bogor Zoological Museum in Indonesia. Differences in habitat preferences, vocalisations, plumage and bill coloration between the Sangihe birds and Little Shrike-thrush *Colluricincla megarhyncha* of New Guinea and adjacent offshore islands (Coates, 1990; White & Bruce, 1986) strongly suggest that the former should be accorded specific status. Given its apparently restricted distribution and altitudinal range, *Colluricincla sanghirensis* should be included on the list of globally threatened species as critical.

ENDANGERED

Red and Blue Lory *Eos histrio*

The population status of *Eos histrio* on Talaud was assessed and ecological data collected. Results from 1995 and 1997 projects can be compared with work in 1996 (Lambert, 1997) to determine the decline of this species. Six roost trees were counted: in Tuabatu, an area renowned for its bird-trapping, the roost declined from c.250 individuals to c.50 birds in the 18 months between our two expeditions. We researched illegal trade,

the main threat to this charismatic bird, through informal interviews with residents and by direct observations. Trapping is the major factor threatening the species at present. Action Sampiri gave estimates in local meetings of a total Karakelang (and thus world) population of 5,000-10,000 *Eos histrio*, with c.1,000 birds being lost to trade in 1996. In 1995, the endemic Sangihe race *E. h. histrio* was rediscovered at Talawid. No observations of the race were made in 1996 (see Lambert, 1997). Local inhabitants suggested this was not the right season for seeing it, but in meetings held on Sangihe-Talaud, we stated the Sangihe race of this endemic species to be extinct. We recommend upgrading the Red and Blue Lory to critical.

Blue-naped Parrot *Tanygnathus lucionensis*

The Talaud race of Blue-naped Parrot *T. l. talautensis* was regularly encountered in primary forest and an unfledged juvenile was photographed in northern Karakelang in mid-March. Karakelang supports an important population of this species, which appears to be widespread at low densities. The species is likely to be demoted to near-threatened in the forthcoming *Asia Bird Red Data Book* (J. C. Lowen verbally 1997).

Sangihe Hanging Parrot *Loriculus catamene*

Sangihe Hanging Parrot was found to be present in all areas visited. It has apparently adapted to habitat changes that have accrued from forest clearance. Threats include habitat loss, hunting, disease and poisoning by agricultural chemicals.

Elegant Sunbird *Aethopyga duyvenbodei*

Elegant Sunbird was relatively common in forest and adjacent cultivated areas, but was absent from areas without remnant forest patches. Gunung Sahengbalira supports an important population of the sunbird. The main pressure is loss of habitat.

VULNERABLE

Philippine Megapode *Megapodius cumingi*

On Sangihe this species was encountered irregularly, with the majority of records coming from Gunung Sahengbalira and Talawid. In contrast the species was very commonly encountered on Karakelang and this island may form a stronghold.

Grey Imperial Pigeon *Ducula pickeringii*

In February 1997 Action Sampiri observed what is probably one of the largest flocks ever recorded of the species, with a minimum of 18 birds going to roost on Karakelang. Talaud may form a stronghold for this species.

NEAR-THREATENED

Nine near-threatened species have been recorded within the Sangihe and Talaud EBA. Two are thought to be migrants or vagrants with very few records: Far Eastern Curlew *Numenius madagascariensis* and Chestnut-cheeked Starling *Sturnus philippensis*; a third, Great-billed Heron *Ardea sumatrana* is only known from historical records (White & Bruce, 1986; Riley in press).

Schrenck's Bittern *Ixobrychus eurhythmus*

A winter visitor to Wallacea that, in the EBA has been recorded on Siau and Talaud. Recent records are from Karakelang and Salibabu where the bittern was occasionally observed in open secondary forest and cultivated areas.

Malaysian Plover *Charadrius peronii*

Only recorded from beaches in northern Karakelang, with observations from three sites. These records, in 1995 and 1997, are the first from within the EBA.

Nicobar Pigeon *Caloenas nicobarica*

There are historical records of this small island specialist from Sangihe, Siau and Talaud. The few recent records are from Karakelang where the pigeon is apparently uncommon and restricted to primary forest.

Talaud Kingfisher *Halcyon enigma*

Ecological data were gathered on the endemic Talaud Kingfisher, supporting the opinion (see e.g. White & Bruce, 1986) that this species has undergone speciation and merits specific status. The kingfisher was regularly observed in primary forest and degraded forest on Karakelang and Salibabu.

Pied Cuckoo-shrike *Coracina bicolor*

A record on Gunung Sahengbalira was the first on Sangihe since the nineteenth century. Given this single observation, the cuckoo-shrike is assumed to be rare.

Philippine Paradise Flycatcher *Terpsiphone cinnamomea*

A commonly encountered species in all habitats on Karakelang and Salibabu; represented on Talaud by the endemic race *talautensis*.

OTHER SIGNIFICANT RECORDS

Rail *Gymnocrex* sp.

One sighting was made of an undescribed taxon of *Gymnocrex* rail in marshy cultivation near Beo in March 1997. Dr. F. R. Lambert collected a specimen of this taxon in September 1996, which apparently represents a species new to science. A paper providing details of this taxon is in preparation. If confirmed, the rail will become the seventh species endemic to Sangihe and Talaud (F. Lambert *in litt.* 1997).

Lilac-cheeked Kingfisher *Cittura cyanotis*

On Sangihe, Lilac-cheeked Kingfisher *C. c. sanghirensis* - a little known endemic race - was frequently observed, extensive ecological information was gathered and two individuals trapped and blood samples taken.

Black-fronted White-eye *Zosterops atrifrons*

Field observations of the Sangihe race of Black-fronted White-eye *Z. a. nehrkorni* were made on the Gunung Sahengbalira ridge. This race was previously known only from the type specimen collected last century, but since mislaid (White & Bruce, 1986).

Golden Bulbul *Ixos affinis*

Observations of the Sangihe race of Golden Bulbul *I. a. platenae* suggest this well-marked taxon is extremely rare and dependent on remnant forest on Gunung Sahengbalira.

EDUCATION PROGRAMME

Perhaps more encouraging was the impact of the education programme. In all the villages we visited, people were fascinated to learn about their special birds and the problems they face.

On Sangihe we opened a Bird Information Centre in Tamako, the largest town closest to Mt Sahengbalira, converting a shop into a walk-in area equipped with educational resources including books, posters and picture boards. The centre was staffed by project members and received over 800 visitors in the course of six weeks. We also visited ten schools and gave talks about the island's endemic birds to a total of almost 1,500 pupils aged between five and 18 years old. An awareness campaign in the village of Ulung Peliang, close to Sangihe's largest forest area, resulted in a village law being passed to protect remaining natural habitat.

On the Talaud Islands our work concentrated on Karakelang, the largest island in the archipelago, and the home of the vast majority of the world population of Red and Blue Lory *Eos histrio*. Education work took place in three broad areas: communities, local government and schools.

Community meetings were held in nine villages on the island about the conservation of *Eos histrio*. Each was attended by approximately 100 people. Following these meetings, five villages wrote letters to the Regent of Sangihe and Talaud, requesting an area law be passed to protect *Eos histrio*. These letters were personally delivered to the Regent by the Action Sampiri team. Meetings with bird trappers were made in the six main trapping villages on Karakelang, to attempt to find a solution to the problem of unsustainable trapping of birds on the island. A senior trapper from Tuabatu village joined Action Sampiri for six weeks, becoming an integral member of the conservation education team.

A seminar about the conservation needs of Red and Blue Lory *Eos histrio* for local government officials was held in Beo, capital of the Talaud Islands, in February 1997. This was attended by district councillors, village heads and representatives of the police, the army and education department officials. We discussed the conservation of Red and Blue Lory *Eos histrio* and possible solutions, asking for opinions and ideas from local people. Action Sampiri met with the government head of all four districts on Karakelang Island, and with the Regent of Sangihe and Talaud to discuss conservation of the islands' endemic birds, particularly *Eos histrio*. We are working towards the implementation of a law that would ban any trade in, or trapping of, Red and Blue Lory *Eos histrio*.

Finally, talks about Red and Blue Lory *Eos histrio* and its conservation were given to almost 2,000 pupils in 16 schools. Some children were invited to join the project, learn some basic birdwatching skills and experience our work first-hand.

With the bird trade being a specific threat to the islands' endangered parrots, Action Sampiri also undertook some work in the provincial capital of North Sulawesi, Manado. Specifically, we worked with undergraduates from Universitas Sam Ratulangi and in total 12 students joined the project as counterpart scientists. We organised a birdwatching training workshop for local students at Tongkaina, just outside Manado, on 20th - 22nd December 1996. Twenty-five students attended the three day event, four later joining the project on Talaud for two weeks. We introduced students to the basics of bird identification, provided training in making field notes, using binoculars and other aspects of fieldcraft, and provided a focal point for students from different institutes to meet and discuss birdwatching.

Action Sampiri also worked with local media. We made three, two hour appearances on the local *Radio Smart FM's* Golden Age chat show broadcast over Manado, Bitung and Minahasa. An article about Action Sampiri's project on Sangihe and Talaud appeared in the *Manado Post* newspaper in October 1996.

Did our approach work? In just six months we did not expect to see major changes on Sangihe and Talaud, but we have laid strong foundations for future work. In all villages, without exception, we were afforded great hospitality and our project was greeted with enthusiasm and interest. It is almost impossible to measure 'progress' in a project of this nature, but communities living adjacent to Mt Sahengbalira have passed village laws banning the further clearance of primary forest; trappers from Tuabatu are thought to have significantly reduced capture rates of Red and Blue Lories and in April 1997, Action Sampiri were able to present the head of government on Sangihe-Talaud with letters from seven village and district heads calling for the implementation of a law banning trade in Red and Blue Lories. Such progress was made possible by an interaction of factors: a knowledge of the islands and their people, gained in 1995, was vital; the combination of UK students, students from the local university in Manado and local people was very effective, all groups learning much from each other during the project; closely combining our research and awareness programmes gave great credibility to the data we presented in village meetings and an ability to adapt to local work patterns, accepting bureaucratic formalities as necessary, benefited our work in the long-term. But of paramount importance was the willingness of local people to listen, absorb information, question our statements and take positive action. The conservation problems we are trying to address were created inadvertently by the islands' residents, it is clear to us that they should be part of the solution.

Plans are now being developed for a return to Sangihe and Talaud as the situation on these islands, particularly with respect to the over exploitation of the Red and Blue Lory, is changing rapidly and despite the successes enjoyed by Action Sampiri, the future of all endangered species on the islands is far from secure.

ACKNOWLEDGEMENTS

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Pittas have long been popular avicultural subjects, which given the right conditions do well, except this is when it comes to breeding. Breeding successes remain relatively uncommon, probably due mainly to the fact that the male and female are so notoriously difficult to house together.

*This account of the breeding of the Hooded Pitta *Pitta sordida cucullata* by the late Jean Delacour, selected by Ron Oxley, was first published in the magazine in 1934. A few years later M. Delacour also succeeded in breeding Elliot's Pitta *P. ellioti*. The next success to be reported in the magazine was probably not until 1962, when Charles Everitt described the breeding of the Bengal Pitta *P. brachyura* in 1961 in Edward Marshall Boehm's aviaries at Trenton, New Jersey, USA (Avicultural Magazine, 68, 1:33-35). Then in 1973, S. T. Johnstone reported the breeding of the Blue-winged Pitta *P. moluccensis* in 1972 at the Wildfowl Trust, Slimbridge (Avicultural Magazine, 79, 4:129 and 79, 6:229). It was thought to be the first species of pitta to be bred in the UK. This pitta is treated sometimes as a race of the Bengal species and sometimes as a full species in its own right. At least two other species have been bred in the UK, the Hooded Pitta at Birdland, Bourton-on-the-Water and the Banded Pitta *P. guajana* at Blackpool Zoo. If you know of other successes elsewhere, perhaps you will write and provide details.*

*It should be noted that the scientific name of the Hooded Pitta is now *P. sordida*. *P. s. cucullata* is one of 12 races of it listed by Howard and Moore (1980). -Ed.*

BREEDING THE HOODED PITTA

Pitta cucullata

by J. Delacour

Although many species of pittas have been introduced into Europe during the last 20 years, most of them very beautiful, none had so far bred or even nested in captivity.

Pittas are forest birds, living on the ground and only perching at night, and have insectivorous habits. They hop about noisily on the carpet of dead leaves, not wild, but often difficult to see. It was clear that a thickly planted aviary, with a moist atmosphere, was the only accommodation to try to induce them to nest, and I always thought my greenhouse aviaries were very suitable for the purpose. In fact, since the beginning, I always kept in them some pittas, in perfect condition. Their feet, which are very tender, kept in good order, and their colours, which often fade in cages, remained as bright as they are when at liberty.

Pittas prove quite harmless to other birds, even as small as

hummingbirds, but they are most intolerant to one another. It is almost impossible to keep two together, even in a large aviary and male and female of the same species, and this has been the principal obstacle to their breeding in confinement. In the early spring of 1933, however, I succeeded in keeping together two Hooded Pittas *Pitta cucullata*, a species which is often imported from India and extends to Indo-China and the Malay Peninsula. Both sexes are alike, of a pretty, soft green colour with a black and chestnut head, a crimson belly, and lovely shining blue patches on the wings and rump.

There was no doubt that the smaller bird was a female, as it had dropped a couple of eggs shortly after it had arrived. The other one was taller, with a stronger bill, and gave the impression of being a male, rightly enough. At a few days' intervals, in May 1933, both birds were let out in a large compartment of the tropical aviaries, 40ft x 15ft (approx. 12.2m x 4.5m) with a temperature of 65°-90°F (18.3°-32.2°C) all the year round. It is thickly furnished with tropical plants, and contains a blue waterlily pool. There are some 40-50 hummingbirds, sunbirds, and small insectivorous species, as well as a dozen Chinese Quails. None of them seems to be noticed by the pittas.

Each bird kept in a corner, under the thick vegetation; both were always quite tame, and readily fed at one's feet. When they met there was nothing more serious than a short fight, and for months they lived as far apart as they could from one another, in a state of armed peace. On 10th April 1934, the male started calling loudly from the top of a tree, where he seldom ascended before, and such serious struggles took place that I was almost obliged to separate the pittas; but at the same time they were seen casually picking up and carrying about nesting materials. I left them alone, and by 20th April they began to build a nest on the top of a dry stone wall, all covered with plants, about 4ft (approx. 1.2m) high. The male was the first and principal worker, but the female helped also. There were no more disputes now between them.

As the pittas were pulling out plants and roots, I provided them with small sticks, hay, dead leaves, and moss. All were used, and by the 20th the main work was completed. The nest, as is well known, at liberty, is a covered-up affair, the size of a football, with a large opening in front, level with the ground. The pittas then worked at the inside, lining it with fibres, moss, rootlets, and decayed leaves. On the 30th I saw the male feeding the female. The first egg was laid on 2nd May; it was short and rather rounded at both ends, white, spotted with pale reddish brown. Eggs were laid the next three days, and both sexes sat tightly on 6th May, frequently replacing one another every hour or so. Being very tame, one could touch them in the nest, but sometimes they became annoyed, and flew savagely at one's face.

The first egg hatched on 18th May; on the 20th there were three young birds, the fourth egg containing a well-developed chick dead in the shell.

A curious circumstance is that the chicks almost immediately poke their head out from their parent's breast, and even come out on the edge of the nest, probably on account of the heat. The result was that, twice in a few hours, I found one of them fallen on the ground below the wall. I put it back, without injury, but to avoid further accidents I built in front of the nest a small platform of sticks and hay, where they could comfortably disport themselves, and no more trouble occurred.

The chicks are naked, of a reddish flesh colour, the fore part of the head being black; the bill is orange yellow, as is the gape. Both parents fed the chicks mostly on cut up bullock's heart, with mealworms, a few earthworms, and insectile mixture. They are not difficult to feed, and I believe meat alone would be sufficient to rear them. Naturally they always had a liberal supply of it. On 24th May one young one disappeared, and was never found.

Feather sheaths quickly appeared, and the growth of the youngsters was very quick. They came out more and more on the platform now, so much so that on the 31st one was out of the nest, flying well enough. The weaker one also came out, but was found half drowned in the pond, and just saved. A small screen was put up to avoid further accidents. But it was to no avail, and this same young pitta was drowned on 5th June, after having been flying well for several days. Both parents fed the remaining young bird devotedly, and did not abandon and bully it as I had feared, as the mother had started laying again in the old nest on the 31st, while the male began another nest, further away, in a similar situation. Probably on account of the stimulating food, the female laid every day, as many as ten eggs, by 12th June. She insisted on laying in the old nest, and all but one egg dropped on the ground. The old nest had been kept very clean, the parents taking right away the droppings of the chicks, but the male had by then completed the new nest and would not go to the old one again. The birds were not sitting. On 13th June I removed the old nest and put eight eggs into the new one (I thought ten were too many). Very docile, the female went to the new nest and incubation started immediately. Two eggs, probably addled, were rejected after a few days. At the same time, both parents continued feeding their first young, now quite strong, and eating also by himself since 12th June. However, on the 21st I took him by hand (he is very tame), and removed him into another compartment, where he now lives happily.

The first plumage of the young Hooded Pitta is as follows: top of the head streaked dark brown and dull chestnut; underparts earthy brown, rather pale; belly and vent pale pink; nape black, upperparts blackish green; quills,

as in the adults, but duller; greater wing coverts dull black with whitish terminal and subterminal spots; lesser wing coverts blackish green; rump pale blue; bill brown with tip and gape yellow; legs and feet greyish pink.

Green feathers appeared very soon, and by 20th June had almost completely replaced the brown ones on the underparts. A complete moult into adult plumage took place on the beginning of August.

On 23rd June the head of the chick was observed, and four the following day. At once a platform was built in front of the nest. On 11th July, on my return from the Ornithological Congress at Oxford, the four young pittas were out of the nest, and they all have been fully reared.

But we now come to the sad end of the story, and we shall see that, like the thrushes, pittas have the most wicked and puzzling temper.

As soon as the young ones had left the nest, the male pitta, whose plumage, and especially the quills, were in a very worn state, started at once building another nest, this time on the ground, but against the wall. I provided him with the necessary materials; the female helped a little and, by 15th July, the nest was almost completed. I noticed that day that there was a fight between the two parents, but I thought it was only, as usual, an introduction to their mating, and paid little attention to it. The next day the female was chasing the male, who kept hidden most of the time, and I decided to keep a special watch on the pittas. I went into the greenhouse every hour or so, to see how matters were going on; it was very much the same. But at the end of the day the male was found dead in the pond. There is no doubt that the female, whose wings and other feathers were still perfect, pushed him into the water, and prevented him from getting out. He was in perfect health otherwise, and had no visible wounds.

The female has not laid up to now; it is very probable that the male wanted to breed again; but she refused to do so, hence the struggle with its tragic end. She carried on feeding the young ones and still is looking after them most devotedly to this day.

I only hope that, among the young birds, there will be a male to replace his father. I have also got now a pair of Macklot's Pittas in my greenhouses. But I have only three compartments large enough and suitable for the breeding of pittas.

The following article, also about the Hooded Pitta, was published first in 1959 (in Vol. 65, No. 2). A plate was reproduced as a colour frontispiece from an original painting by the author of the article, the late David Reid-Henry. It was reproduced in colour again in Vol. 100, No.2, 1994. - Ed.

THE HOODED PITTA

Pitta sordida cucullata

by D. M. Reid-Henry

This beautiful bird hails from the jungle-covered hills and mountains of Assam, Burma, Malaysia, and Siam.

Like most of the family it is a creature of the undergrowth where it occupies its time in scuffling about amongst the wet and decaying vegetation in the search of insects and grubs, spiders, worms, and small reptiles. These, with a few berries and other fruit, represent its diet-sheet. When appetite is satisfied the bird finds a perch on some fallen log or moss-covered boulder and spends considerable time if undisturbed preening or just sitting still.

When alarmed it slips quietly away, flying low for a short distance to a more secure position. The usual mode of progress for pittas is by means of a succession of prodigious hops with intervals between, when they stand erect on their long legs to listen or to look for food. They do not leave the forest undergrowth from choice during the day, but at night they mount high into trees to roost.

In a previous article, when I wrote of the Bengal Pitta (*Avicultural Magazine*, Vol. 64), I mentioned much in the way of general details about these birds, and I will content myself and, I hope, the readers by simply referring to that article. What would apply in the case of that bird also holds good here, at any rate as regards habits and treatment in captivity.

However, as pittas of one sort or another are now more easily obtainable than they have been in the past I would like to recommend them to any serious aviculturist who has some experience of keeping softbills. They do equally well in either planted aviary or a large cage provided they are kept warm *and with a soft floor*. A good insectivorous food supplemented with snails, centipedes, mealworms, or any other garden-inhabiting gentry will keep them well satisfied, whilst a barrow-load of dead leaves (preferably moist and well decayed) along with some rotting wood will give the owner some fine chances to watch the bird in action. Without this natural rubbish the bird will probably spend the day hidden as far from view as it can escape.

I only once possessed one of this species - in Calcutta, but I have seen many in other peoples' possession, and it was from one such bird, a perfectly tame and confiding creature, that I was able to make the drawings for the accompanying coloured plate.

About this plate I would like to make one point. Somewhere along the line of reproduction the green of the back has become too light. There is

considerable difference between the bluish-green of the underparts which is a rather pale colour, and the dark, slightly slaty-green of the back and wings. The illustration does not show this contrast at all well.

There are three races of this pitta in Malaysia, and altogether about eight have been separated.

Pitta sordida mulleri which breeds in Java, Sumatra, and Borneo, has a black crown. *P. s. bangkana*, the form found breeding in Banka and Billiton has brown on the sides of the crown.

P. s. cucullata, the subject of the plate, comes from the north of the range for the species, but migrates into many areas occupied by other races. In all the brown-headed forms, the base of the crown feathers are black so that some confusion may arise in identification when the feathers are puffed up, because the black bases then become apparent and a more or less distinct black line through the centre of the crown from bill to nape appears. It is this feature which I have tried to bring out in the plate, and is very clearly to be seen when the bird is at rest.

AVICULTURE'S GOLDEN AGE

by Frank Woolham

Students of the game are usually agreed that the years around the turn of the century, when the likes of Grace, Ranji, Fry, Woolley, MacLaren, Rhodes, Hirst and other 'greats' bestrode English grounds, constituted cricket's golden age. Other sports have also produced outstanding performers who contributed to memorable occasions in soccer, rugby, tennis, athletics and many other activities. But what about aviculture, by no stretch of the imagination a pastime demanding the expenditure of much energy - but one which has not only brought pleasure to millions but undoubtedly added considerably to our knowledge of birds?

I suspect the years between the two world wars - and perhaps a few more in the post-1945 era - come very close to being aviculture's golden period. Many of the great collections had been or were in process of being assembled - Clères, Foxwarren Park, Woburn, Keswick and Leckford were among those leading the way in Europe, with others appearing in many parts of the world including the USA, Australia and various south-east Asian countries. Such eminent aviculturists as Delacour, Ezra, Gurney and Spedan Lewis, together with many public collections around the world, relied heavily on the expertise of a handful of collectors, people like Frost, Webb, Porter, Cordier, Goodwin, Goodfellow and Shaw Mayer - and, of course, Delacour himself who travelled widely, particularly, but not solely, in Indochina.

I met only two of this particular quintet - Cecil Webb and Wilfred Frost. On a visit to London Zoo with the late Gerald Durrell we bumped into Webb in the Bird House - and spent several hours talking to him, attempting to soak up some of his enormous knowledge of the care and management of exotic birds in the critical period after capture. For me it was as rewarding an avicultural tutorial as I can remember - for Gerry, who was then planning his first expedition to West Africa, it was of rather more immediate value and...well, let us just say that we talked of nothing other than our meeting throughout a five-hour rail journey back to Manchester (trains really *were* slower in those days)!

Much of our conversation with Webb centred on the birds of West Africa, a region with which he was very familiar, and years later, locked away at the back of my mind, I had good reason to remember some observations he offered to Gerry Durrell about a particular bird of which, up to that time and for some subsequent years, I had no knowledge. The species in question is the Oriole Babbler or Moho *Hypergerus atriceps* which he mentioned in passing as being one of the most highly insectivorous birds he had

encountered in Africa and how he had to have small boys regularly collecting livefood for them. Some 30 years later I purchased an imported pair of these interesting birds and the vendor (with refreshing candour) warned me that all they had consumed while in his hands was water and mealworms. Fortunately it was at a time when locusts were becoming more readily available from a few sources - and how relieved I was to have been involved in that earlier discussion. People like Webb and his colleagues were highly skilled aviculturists whose birds were invariably in good health - and often impeccable plumage - when they were landed after an often lengthy sea voyage. It is not so many years ago that collectors working in countries, such as New Guinea and certain South American locations, faced a variety of hazards ranging from unpleasant tropical diseases to efforts by local populations to evict them from their territory by a variety of means ranging from fusillades of arrows to the close attentions of the local witch-doctor.

I spoke with Wilfred Frost on quite a few occasions in my zoo days and some stories of incidents which had overtaken him while collecting in New Guinea were quite blood-curdling. The man himself, although by then elderly and somewhat frail, had an uncanny habit of what I can only describe as materialising (as opposed to arriving) at the zoo soon after returning to England from some far-flung outpost. We were always aware of his impending return via cables which mainly provided brief details of what he would have for sale. Birds of paradise were invariably high on the list, but he also brought back a variety of other species including bowerbirds, catbirds, honeyeaters and so on.

Although he travelled widely in Asia and Central Africa, Charles Cordier was also something of a Central and South American specialist who provided some of the USA's leading zoological collections with many avicultural rarities including rare hummingbirds and tanagers, cock-of-the-rocks, quetzals, manakins, bellbirds and umbrellabirds. Writing in the *Avicultural Magazine* in 1943, Jean Delacour refers to a collection Cordier brought from Costa Rica to the New York Zoological Park as '...perhaps the finest lot of birds he has ever secured'. Among them were three umbrellabirds, 18 quetzals and 54 hummingbirds, few of which, it was believed, had ever been previously imported. Cordier was another past-master of the highly-skilled art of delivering delicate wild-caught birds in excellent condition and Delacour applauded his expertise with an observation about the quetzals: 'For the first time, I saw perfect specimens...tame and feeding well'

Such was Delacour's admiration for Cordier's abilities that the two of them travelled to Indochina - one (Delacour) to obtain skins for taxonomic purposes, the other to concentrate on live birds, which he did to some purpose by amassing a collection of around 300 specimens. They included Long-tailed Broadbill *Psarisomus dalhousiae*, Fulvous Pitta *Pitta oatesi* and Elliot's Pitta *P. ellioti*.

Aside from the collectors, there were numerous individuals and commercial organisations dealing in birds in the UK, particularly between the wars. In London, Gamages store in Holborn had a thriving zoo department which offered for sale a variety of species many of us would like to get our hands on today. In 1933 their advertisement in the *Avicultural Magazine* listed Giant Whydahs *Euplectes progne*, Virginian Cardinals *Cardinalis cardinalis*, Nonpareil Buntings *Passerina ciris*, Scarlet and Festive Tanagers *Ramphocelus bresilius* and *Tangara cyanocephala*, hangnests *Icterus* spp., caciques *Cacicus* and *Psarocolius* spp. and Sulphury Tyrants *Pitangus sulphuratus*.

H.E. Rogers owned an interesting enterprise on Merseyside - Liverpool Zoological Park with an address off Lark Lane. For reasons which escape me, this locality seemed to hold a particular attraction for bird keepers and bird dealers and long after Rogers had fallen off his perch I purchased quite a few exotics from at least two other dealers who had established themselves in the area. Arrangements at the park appear to have been somewhat vague, according to information gleaned years ago from people who had known the place well. Apart from birds there was a variety of larger, zoo-type exhibits (including mammals) which the locals, in exchange for a modest admission charge, could inspect. Turn up with a well-stuffed wallet, however, and you could take away your choice of exotic pet - anything from a Binturong to a Buzzard.

Some of the prices provide a fascinating insight into the '30s animal trade. At the bottom end of the scale you could purchase such as Bronze Mannikins *Lonchura cucullata* and Green Singing Finches *Serinus mozambicus* which were fairly expensive at what today would be around 25p (approx. US\$0.40) per pair. There were also plenty of larger and more interesting species on offer - pairs of Germain's Peacock Pheasants *Polyplectron germaini* for less than a 'fiver' (approx. US\$8.00), Red-faced Lovebirds *Agapornis pullaria* £2.50 (approx. US\$4.00), various toucans *Rhamphastos* spp. £5 and £6 (US\$8.00 and US\$9.60) each. More expensive were Andean Condors *Vultur gryphus* at £100 (approx. US\$160) each. Further afield in Belgium, Robert Henry was putting even more temptation in the path of aviculturists with flamingos *Phoenicopterus* spp. £9.50 (approx. US\$15.20) per pair, Argus Pheasants *Argusianus argus* £12.50 (approx. US\$20.00) per pair, Squacco Herons *Ardeola* spp. £5.00 (approx. US\$8.00) per pair and African pelicans *Pelecanus* spp. £5.40 (approx. US\$8.64) each.

There were also some excellent book bargains to be had and in the Jubilee Number of the *Avicultural Magazine* (May 1935), Frederick R. Jones of Torquay offered five volumes of Gould's *The Birds of Great Britain* '...with 367 beautiful hand-coloured plates, imperial folio, crimson half morocco, gilt edges'. The price? A snip at £34 (approx. US\$55)!

It is difficult to identify a precise time when the sun began to set on what had been a truly golden era for aviculture. But Jean Delacour, expressed forebodings in his account of 'The Progress of Aviculture During the Last Three-quarters of a Century' which was published in the *Avicultural Magazine* in November 1969.

He wrote: 'Today air transportation has changed the picture entirely. Native trappers in remote parts of the world can despatch their catches easily by aeroplane and the flights are so fast that even very delicate birds can be left unattended until they reach their destination. Innumerable species which had never before been seen outside of their native countries, many beautiful and unusual hummingbirds, sunbirds, quetzals, tanagers, cock-of-the-rocks, etc., are frequently exported in numbers - in fact they have been captured far too much; the early losses have been tremendous by lack of careful and knowledgeable handling, and restriction of such activities is urgently needed. As a result of this new situation the great harbours and bird shops of such as London, Liverpool, Marseilles, Le Havre, Antwerp, Rotterdam, Hamburg and Genoa have been closed, and the new ones are found in the vicinity of the main airports.'

'As circumstances have changed considerably, so have the bird collections; very few large, private ones remain, while numerous new zoos, large and small, and open to the public, have appeared - particularly in England and in France. Several of these maintain very good bird collections. Keen bird keepers and breeders, however, who maintain comparatively small numbers of rare and difficult species, very well housed and cared for, are even more numerous than they used to be, and they carry on with the same skill and enthusiasm the work of their predecessors.'

'It is interesting to note that, as time passes, bird-keeping is gradually becoming less difficult....Avicultural societies, of which there are only a few in the world, ours being the most important, are probably more prosperous today than at any previous time. This is mostly due, I believe, to the greatly increasing interest of the public in general in natural beauty, and birds stand at the top of the ladder. It seems to be one happy result of a sad human situation; the artificial, cramped distressing conditions of life of so many city people make them crave for trees, flowers and birds. It contributes to the increase of our membership.'

I am sure many current members will identify with those views - even to the point of regarding what Delacour wrote as prophetic. Aviculture, not only in Britain but the rest of the world has undergone dramatic change and in terms of species availability in Europe is enjoying a feast.

Will aviculture ever again experience a golden age? I doubt it. Can English cricket look forward to a renaissance? Ask me again in 1999 when we have played consecutive series against the West Indies, South Africa and Australia!

PASSERINE TAG (TAXON ADVISORY GROUP) REPORT - 1996

Chairperson: David Jeggo (Jersey Wildlife Preservation Trust).

Members:

Colin Bath (Paignton), Duncan Bolton (Bristol), David Coles (Child Beale), Mike Curzon (Rode Bird Gardens), John Ellis (Chessington), David Field (Edinburgh), Ian Fisher (c/o London), Chris Gough (Dudley), Nigel Hewston (Private), Jim Irwin-Davis (Harewood), Ron Oxley (Foreign Bird Federation), Laura Paterson (Leeds Castle), Mark Pilgrim (Chester), William Timmis (Lotherton), Simon Tonge (London), Roger Wilkinson (Chester), David Woolcock (Paradise Park).

Advisors

Nigel Collar (Birdlife International), Andrew Greenwood (Int. Zoo Vet. Group).

Aims in 1996

To continue to review passerines in captivity and species in need of programmes.

To continue to review which of these species are in need of *in-situ* support.

To promote research and gather data on certain species for possible application *in-situ* or *ex-situ* in the management of threatened species.

To work towards the production of husbandry guidelines for all passerine families or smaller taxonomic units. Those for the laughing thrushes of the genus *Garrulax*, for starlings and for chough are in progress.

To produce a TAG leaflet.

To identify possible sources of support for *in-situ* work with the Yellow-throated Laughing Thrush *Garrulax galbanus simaonesis* in China.

To generate additional support for the vital *in-situ* conservation of the Bali Starling, pending the signing of a new agreement with the Indonesian conservation department.

To continue working towards re-establishing the Cornish Chough population.

Progress in 1996

The 'Recommended Species List' is a list of 20 species selected as those which collections should maintain in preference to others. The second annual survey was conducted and extended to cover more than 60 collections holding passerines.

A survey on *Ataxoplasma* in Bali Starlings has been completed. Work on monitoring the incidence of this disease in the population continues. The number of species monitored by the TAG which are present in captivity and threatened in the wild continues to increase and now includes the Omei Shan Liocichla *Liocichla omeiensis* and Mount Katanglad Parrot Finch *Erythrura coloria*. Draft husbandry guidelines for laughing thrushes *Garrulax* sp. have been produced. The process of assessing the level of threat to passerine species and the priorities for the TAG's attention is ongoing

Meetings

The annual meeting was hosted by Edinburgh Zoo on 27th March.

Data

Species	Level of Management	Status: Individuals (Collections)	Species Manager	Studbook status/date last publ.
Yellow-throated Laughing Thrush <i>Garrulax galbanus</i>	JMSP2	7.9.11 (12)	D. Coles	In prep.
Red-tailed Laughing Thrush <i>Garrulax milnei</i>	JMSP2	9.9.7 (12)	D. Coles	In prep.
Bali Starling <i>Leucopsar rothschildi</i>	EEP/JMSP2	89.74.28 (29)	D. Jeggo (UK Coordinator) I. Fisher (UK Studbook Keeper)	UK1993 Eur 1994 (Cologne)
Chough <i>P. pyrrhocorax</i>	JMSP2	19.25.6 (10)	D. Woolcock	1993
Fairy Bluebird <i>Irena puella</i>	JMSP4	10.9.0 (10)	S. Tonge	No studbook
Orange-headed Thrush <i>Zosterops citrina</i>	JMSP4	12.9.3 (7)	C. Bath	No studbook
Chestnut-capped Ground Thrush <i>Zosterops interpres</i>	JMSP4	0.1.0 (1)	D. Bolton	No studbook
Himalayan Whistling Thrush <i>Mylophonus caeruleus</i>	JMSP4	3.1.0 (2)	J. Ellis	No studbook
Common Shama <i>Copsychus malabaricus</i>	JMSP4	2.5.0 (2)	-	No studbook
Magpie Robin <i>Copsychus saularis</i>	JMSP4	2.2.0 (2)	-	No studbook

Species	Level of Management	Status: Individuals (Collections)	Species Manager	Studbook status/date last publ.
White-crowned Robin Chat <i>Cossypha albicapilla</i>	JMSP4	8.6.2 (8)	J. Irwin-Davis	No studbook
Plumbeous Redstart <i>Rhyacornis fuliginosus</i>	JMSP3	4.1.0 (2)	-	No studbook
Silver-eared Mesia <i>Leiothrix argentauris</i>	JMSP4	12.10.1 (7)	-	No studbook
Red-crested Cardinal <i>Paroaria coronata</i>	JMSP4	2.4.1 (2)	S. Tonge	No studbook
Silver-beaked Tanager <i>Ramphocelus carbo</i>	JMSP4	7.4.3 (7)	-	No studbook
Gouldian Finch <i>Chloebia gouldiae</i>	JMSP4	15.13.3 (6)	M. Pilgrim	No studbook
Blue-faced Parrot Finch <i>Erythrura trichroa</i>	JMSP4	0.0.0 (0)	M. Pilgrim	No studbook
Star Finch <i>Neochmia ruficauda</i>	JMSP4	3.1.0 (3)	M. Pilgrim	No studbook
Java Sparrow <i>Padda oryzivora</i>	JMPS4	3.3.66 (6)	-	No studbook
Superb Glossy Starling <i>Spreo superbus</i>	JMSP4	17.14.8 (13)	R. Wilkinson	No studbook
Azure-winged Magpie <i>Cyanopica cyana</i>	JMSP4	24.22.23 (15)	D. Bolton	No studbook
Pileated Jay <i>Cyanocorax chrysops</i>	JMSP4	4.2.0 (4)	D. Coles	No studbook
White-tailed Jay <i>Cyanocorax mystacalis</i>	JMSP4	2.0.1 (2)	D. Coles	No studbook
Blue Magpie <i>Urocissa erythrorhyncha</i>	JMSP4	17.14.2 (15)	D. Coles	No studbook

Data accurate on 31.12.96

There is a European TAG for Passerines, co-chaired by David Jeggo and Theo Pagel (Cologne, Germany).

Special Concerns

The profile of passerines in Federation collections needs to be raised. More effort needs to be put into their management and breeding in order to form more sustainable populations. With the exception of the Bali Starling which is now breeding well, more attention in particular needs to be paid to the other JMSP (Joint Management of Species Programme) species to encourage successful reproduction.

The Passerine Taxon Advisory Group (TAG) in conjunction with the Association of British Wild Animal Keepers (ABWAK) is planning a one

day symposium to be held on the 19th May 1998, at Bristol Zoo. It is planned to examine the problems, priorities and practical aspects of improving the husbandry and breeding of passerines in captivity, and will also discuss their conservation. The following day, 20th May, will be devoted to pigeons and doves, and will be organised by Duncan Bolton.

Further information about both days can be obtained from:-

Duncan Bolton,
Bristol Zoological Gardens,
Clifton
Bristol BS8 3HA.

THE SOCIETY'S VISIT TO BIRDLAND

by Stewart Pyper

Following the Council Meeting of 12th April 1997 (reported on next page) and lunch in a local pub, almost 50 members and their guests visited Birdland. The original Birdland was created by the late Len Hill, who was a staunch supporter of the Avicultural Society. After his death it closed and reopened later at a new seven acres (approx. three hectares) site beside the River Windrush in Bourton-on-the-Water. It is being built up gradually and it looked as so some of the original aviaries have been re-erected. The new owner is Eddie Twigg, Veronica Wilson is the Manager and David Woodcock the Curator.

It was a warm, sunny, spring day. As in most collections nowadays there was a large selection of parrots, which included Yellow-streaked Lorries, Hawk-headed Parrots and Queen of Bavaria Conures, Rothschild's Grackles (Bali Starlings), Red-billed Blue Magpies, Spreo Starlings and Violaceous Touracos were admired, as were Kookaburras and White-crested Laughing Thrushes. As a result of the visit, Mike Curzon has loaned Rode's Blue-crowned Motmot to Birdland to make up a potential breeding pair.

In a glass covered aviary, with dense vegetation, were single examples of the Burmese Shrike, Lilac-breasted Roller, San Blas Jay, Imperial Pigeon and Kookaburra, each in need of a mate. Rheas, flamingos and Black Swans were admired, as were the large group of penguins, which included several King Penguins.

The tropical house had a breeding colony of Gouldian Finches in an aviary by themselves. Other inhabitants of the tropical house included two Emerald Starlings, a Red-tailed Laughing Thrush and a Red-billed Hornbill. Other hornbills on view in outside aviaries included the Trumpeter and Black species. Grey Peacock Pheasants always attract attention due to their wonderful plumage and we also admired the Lemon-breasted Pigeons.

COUNCIL MEETING

A Council Meeting was held on Saturday, 12th April 1997 at Bourton-on-the-Water, Gloucestershire.

The following members were present: Miss R. Ezra (President), K. W. Dolton, Prof. J. R. Hodges, C. J. S. Marler and R. C. J. Sawyer (Vice Presidents), K. J. Lawrence (Chairman), M. Curzon, M. Ellis (Hon. Editor), R. Grantham, R. E. Oxley, S. Pyper, P. J. Schofield, S. Tonge, J. T. Trollope and Ms. R. Wiseman.

Stewart Pyper, the Membership Secretary, was pleased to report that the recruitment drive has resulted in an increase in membership. The Editor gave a cautiously optimistic report on his progress in planning the forthcoming issues of the magazine, but was at pains to stress that progress is very much reliant on members providing a steady flow of material suitable for publication in the magazine. The Editor was granted permission (subject to cost) to reproduce three colour plates to illustrate the article about the White-fronted Bee-eater in the next magazine.

It was unanimously agreed by the Council, that the President, Miss Ruth Ezra should write and thank Dr Quinque for his most generous donation to the Society's funds.

It was decided that the President's Garden Party would be held on Sunday 22nd June, and that the Chairman would arrange the Autumn Social Meeting.

COUNCIL MEETING

A Council Meeting was held on Sunday, 14th September 1997 at Bristol Zoological Gardens.

The following members were present: Miss R. Ezra (President), K. W. Dolton and R. C. J. Sawyer (Vice Presidents), K. J. Lawrence (Chairman), M. Ellis (Hon. Editor), R. Grantham, N. Hewston, R. E. Oxley, S. Pyper, P. J. Schofield, G. R. Greed (Hon. Secretary/Treasurer).

The accounts for 1996 showed a small surplus, and it was agreed to have colour plates in all four 1997 issues of the magazine. There were no breeding awards to consider.

It was decided that the D.H.S. Risdon Award for the best article in the magazine during 1996 should go to Anthony J. Mobbs for his article about keeping and breeding Gouldian Finches (*Avicultural Magazine*, 102, 3:99-102). The Council discussed various articles and felt the Anthony Mobbs' article contained a great deal of practical, concise information which formed a sound basis for a person starting to keep Gouldian Finches.

The 1998 Social Meetings were discussed and the meeting concluded with the Hon. Secretary/Treasurer inviting the Society to a special function to be held at Bristol Zoo in June or July 1999.

THE PRESIDENT'S GARDEN PARTY 1997

by Stewart Pyper

The President's Garden Party was held on Sunday 22nd June, when 102 members and their guests journeyed to Cobham, Surrey, to view the wonderful collection of birds kept by our President, Miss Ruth Ezra, and Vice President, Raymond Sawyer. This private collection must rank as one of the finest in the world. Whereas in May it had been feared that we were heading for another summer drought, the garden looked very fresh due to the recent rain. During our visit there were several showers, but these lasted for only a few minutes.

Demoiselle and Crowned Cranes roamed free in the gardens, along with 'Emma' the tame female Stanley Crane. In the aviaries in the front of the house we saw Peruvian Thicknees, Spotted Dikkops, Pink-crested Touracos, Emerald Doves, Island Thrushes and a female grosbeak. The paddock aviaries housed Kookaburras, a Blue Whistling Thrush (at present the two whistling thrushes cannot be paired-up because they fight), Satyr Tragopans, Keas and an egret. Raymond has two baby Giant Tortoises, which is believed to be a European first breeding, and it was interesting to see several of the Giant Tortoises walking around the enclosure.

The 'Jewel Cage' housed Gouldians and Painted Finches. In the lakeside aviary we saw Giant Spotted Laughing Thrushes, Black-necked Stilts and Scarlet Ibis, including a youngster bred last year which is still colouring-up. Black phase Stella's Lories were feeding young. On the lake were flamingos and a selection of waterfowl.

Most of the aviaries are at the rear of the house. All have heated accommodation and are tastefully planted, making them both an aviculturist's and an horticulturist's dream. Blue-faced Honeyeaters had a youngster hand-reared by Sheila Becker, which at the time of our visit was six weeks old, and the Masked Plovers were sitting again. We saw Choughs, Azure-winged Magpies, a Magpie Tanager, Red-winged Laughing Thrushes and Australian King Parrakeets. The five Carmine Bee-eaters are now well established and some tunnels have been constructed in the hope of encouraging them to nest, but so far these have been ignored.

The tropical house had a dazzling array of inmates. Among the birds I saw were six Long-tailed Broadbills, a male Roulroul Partridge, Hooded Pittas, Black-chinned Yuhinas, various zosterops, Golden Bush Chat, Violet-eared and Amazilia Hummingbirds, Splendid Sunbirds which were nesting, and Blue-headed Tanagers. It also houses four Lesser Green Broadbills, Pompadour Cotinga and Strickland's Shama.

The six small indoor heated aviaries contained some more real gems, among them another pair of Splendid Sunbirds, this pair with a youngster

approx. four days old. There were numerous Red-headed Tits, the white race of the Long-tailed Tit, Bearded Reedlings, a Golden-headed Quetzal, various flowerpeckers, dacnis, Purple and Yellow-winged Sugarbirds, Greater and Rufous-bellied Niltavas, Paradise and Turquoise Tanagers, another Hooded Pitta, Fairy Pitta and several young Roulroul Partridges. There were also Brown Twinspots, Crimson Seedcrackers, Western Bluebills and a pair of Rhodospingus Finches, as well as Golden Bush Robin, Blue-winged Fruitsuckers, Scarlet-chested Sunbird and White-fronted Bee-eater. A pair of Red-billed Oxpeckers in rough condition when they were purchased only a short time before had improved so much that they had built a nest and hopes were high that they would reproduce. This aviary has trellis work attached to the wall at the rear so that these birds can cling onto it.

Two birds deserve a fuller description. The first of these being a Black and Red Broadbill from south-east Asia. This species has a blue and yellow bill and its plumage appeared to be more black than red, with a white area on each wing. The broadbill stood out because it was new and most of us had not seen this species before, it having appeared on dealers' lists only in the past ten months or so. Like most broadbills it was not very active and cannot be described as striking in appearance.

The second species is the Orange-breasted Bush Shrike, also known as the Sulphur-breasted Bush Shrike, a very beautiful African species which most visitors would not have seen before. The forehead is greenish yellow, the crown and nape is bluish grey and the back and wings are olive to greenish yellow, while the throat is bright yellow and the breast a rich orange. It measures 19cm (7½in) and is about two-thirds the size of the somewhat similar coloured Grey-headed Bush Shrike. There was a pair, with the female being not quite as bright as the male. There is a good illustration of this shrike in Mackworth-Praed and Grant and a full-page illustration of it in *Shrikes of Southern Africa* by Harris and Arnott.

We saw Bartlett's Bleeding Heart Doves sitting and Green Wood Hoopoes were also incubating eggs. New arrivals at Cobham included a pair of Keel-billed Toucans, and there are now two pairs of Blue-bellied Rollers. It was a delight to watch a pair of red Stella's Lories playing at the water's edge. We also saw Emerald, Royal or Golden-breasted, Amethyst or Violet-backed and Splendid Starlings, also Superb Spreos which have bred again this year, various touracos and the old Toco Toucan. At the time of our visit, Sheila Becker was hand-rearing two Eclectus Parrots only a few days old. Due to the weather, a lovely tea was enjoyed by all, in various parts of the house, where members and their guests were able to enjoy each other's company and discuss various matters - not all of them avicultural. The Society is most grateful to Ruth and Raymond for their kind generosity in donating all the monies from the ticket sales, amounting to over £750, to the Society's funds.

BOOK REVIEW

THE BIRDS OF AFRICA

When I unpacked the review copy of *The Birds of Africa*, Volume V, and saw that this enormous volume (which has 669 pages and weighs almost 8lbs (just over 3kg)) is devoted almost entirely to warblers and flycatchers, my first reaction was one of disappointment. I would have much preferred to have been given the opportunity to review the earlier volume or volumes covering the likes of the kingfishers, bee-eaters, rollers, hornbills, touracos and parrots. It took me a while to appreciate that I now have in a single volume all the warblers and flycatchers which occur in Africa, including the European and other migrants. Most are either 'little brown jobs' or 'little grey jobs' which can be devilishly difficult to distinguish from one another, so having what looks to be all of the species and many of the races and plumages illustrated, and so much information about them in one volume, is obviously a great advantage.

Because most of them lack bright colours, together with the fact that many are highly insectivorous, means that on the infrequent occasions that they become available, their appeal to aviculturists is limited mainly to a few softbill specialists. One species, the Southern Tit Warbler, called in this volume the Chestnut-vented Warbler, was bred recently in the UK by Raymond Sawyer, who you will recall described the breeding in the previous issue of the magazine. So far as I am aware the only other species which has been bred here is the Silverbird (a flycatcher). It was bred here in Cornwall by the late Mrs. Scamell, who imported her birds from Kenya. Re-reading Mrs Scamell's account of the breeding (*Avicultural Magazine*, 79, 6:183-189), brought back wonderful memories of being with Tim and Jane Barnley in Kenya and setting off on a Sunday morning, armed with samosas and Marmite sandwiches and accompanied by their 'bird boys' for Kongelai down in the 'hot country' to catch the Silverbirds, including the pair and their youngster which went to Mrs. Scamell. The Silverbird proved popular because of its attractive coloration and the fact that it is not too difficult to keep. Although, most softbill enthusiasts aspire to trying their hand at keeping paradise flycatchers and wattle-eyes, they are so highly insectivorous that it is questionable whether we should even attempt to keep them. According to this volume, the wattle-eyes and batis or batises are not flycatchers, but flycatcher-like or shrike-like birds, with no general agreement as to precisely where they belong in the overall classification of birds - Sibley and Monroe, apparently on the basis of DNA studies, place them in the family Corvidae!

Volume V opens with the thrushes (including the rock thrushes and ground thrushes, but not the robin chats and other closely allied species) and I have found it interesting to be able to compare various races of the Olive and African Thrushes alongside the Kurrichane Thrush on one plate. I was surprised to find illustrations of the Fieldfare and Redwing in a book about African birds, but then *The Birds of Africa* covers the entire continent including North Africa, where both are winter visitors.

The last bird in Volume V is one which looks and sounds to be a most fascinating species, one I had not been aware of prior to reviewing this volume. It is called the White-tailed Shrike *Lanioturdus torquatus* and is described as 'A semi-terrestrial insectivore, chat-like on the ground but with strong plumage and behavioural resemblance to Batis. Thought to be a malaconotine shrike by Harris and Arnott (1988).' Its eggs resemble those of helmet-shrikes.

The Birds of Africa is published by Academic Press. The present volume (ISBN 0-12-137305-3) is edited by Emil K. Urban, C. Hilary Fry and Stuart Keith, the 32 colour plates (illustrating 676 birds of 312 species) are by Martin Woodcock, the line drawings within the text (illustrating mostly nests) are by Ian Willis, the acoustic references are by Claude Chappuis and the bibliography and indexes by Lois L. Urban. It is priced at £99.00 and is available from the usual booksellers or direct from Academic Press Marketing Department, 24-28 Oval Road, London NW1 7DX. Tel:0181 300 3322/Fax:0171 267 0362/E-mail:wildlife@apuk.co.uk. In the USA, Academic Press is at:525 B Street, Suite 1900, San Diego, California 92101-4495. Internet:<http://www.apnetcom>.

Malcolm Ellis

NEWS & VIEWS

NEW APPOINTMENT

Christopher West, a Veterinary Surgeon, has been appointed to the new post of Chief Curator at Chester Zoo.

* * *

EGYPTIAN VULTURE FORUM

The Vulture Study Group, based in South Africa, is establishing an international forum for conservation groups which run Egyptian Vulture *Neophron percnopterus* breeding programmes. As well as a project in Italy, there are also breeding programmes in Israel, Spain and Bulgaria. The purpose of the forum will be to provide an exchange of ideas, information, advice and assistance. Working together and sharing knowledge will, it is hoped, contribute greatly to the success of all the programmes. Those interested in participating in the forum should contact Dr Gerhard Verdoorn on his E-mail address :-nesher@global.co.za.

* * *

UK RUBYTHROAT

Thousands of twitchers flocked to a field near Weymouth, Dorset, to see a male Siberian Rubythroat *Erithacus calliope*. The twitchers blocked the lanes for more than a mile around the site and so great were their numbers that they are thought to have frightened the bird away. It is the first time a male has been seen in Britain. A female was seen on the Scottish coast in 1975.

* * *

UNIVERSITIES FEDERATION AWARD

The 1997 UFAW Zoo Animal Welfare Award presented for a new or modified zoo exhibit which is judged to provide improved conditions for the welfare of captive animals and helps visitors to appreciate their physical and behavioural needs, has been presented to Marwell Zoological Park for its new Penguin World exhibit. The park's new home for its Jackass and Macaroni Penguins *Spheniscus demersus* and *Eudyptes chrysolophus* consists of a large, contoured and landscaped area and an hourglass-shaped pool. It is large enough to allow the penguins to 'porpoise' and is deep and has submerged rocks. A biological filtration system cleans and recirculates the water into the pool across a pebble beach and via water jets. The land area is extensive and has a range of different substrates on different levels, secluded areas and nest tunnels. The public can observe the penguins from a number of vantage points, including from an elevated viewing platform and through viewing windows.

CHESTNUT LODGE BREEDINGS

Raymond Sawyer reports that since the Society's visit to Chestnut Lodge in June, Avocets, Black-necked Stilts, Satyr Tragopans, Pink-crested Touracos, Bartlett's Bleeding Heart Doves, Black-naped and Beautiful Fruit Doves, Stella's Lories, Black-cheeked Woodpeckers, Green Wood Hoopoes and Blue-headed Tanagers have bred.

* * *

PARTRIDGE REDISCOVERED

A combined team from the Birdlife Vietnam Programme, Amsterdam University and the National Museum of Natural History (Leiden), has confirmed the presence of the Orange-breasted Partridge *Arborophila davidi* in the Cat Loc Nature Reserve, Vietnam. The researchers made 25 sightings of the partridge, previously known only from a single specimen collected in 1927, in a variety of habitats including scrub, bamboo and secondary evergreen forest. Large areas of primary forest in the reserve - which is unprotected despite supporting Vietnam's only population of Javan Rhinoceros - are being cleared for cashew nut cultivation.

* * *

SURPRISE SUCCESS

In *Cage & Aviary Birds*, 27th September 1997, Piet Kraan described breeding the Black-headed Waxbill *Estrilda atricapilla* in the Netherlands. When one of the five eggs broke in the first clutch, causing the others to stick together, he managed to rescue two of them which he placed in the nest of a pair of Black-crowned Waxbills *E. nonnula*, which had started to lay at the same time. When the time came to ring the young, he found two Black-crowned Waxbills and one Black-headed Waxbill in the nest. In the meantime the Black-headed Waxbills nested again and succeeded in raising five young. The latter had red rumps but lacked any red on the flanks and were rather dull versions of their parents.

* * *

NEW BIRD BOOKS

New titles in the *Pica Press Catalogue 97/98* include *Parrots, A Guide to the Parrots of the World*, *Rails, A Guide to the Rails, Crakes and Coots of the World* (due June 1998), *Pigeons and Doves*, described as 'dedicated to their field identification' (also due June 1998), *Birds of Liberia*, *Birds of Somalia* and *A Field Guide to Birds of The Gambia and Senegal*. Further information is available from Christopher Helm, Pica Press, The Banks, Mountfield, Nr. Robertsbridge, East Sussex TN32 5JY. Tel:01580 880561/ Fax:01580 880541.

HATCHED UNDER BENGALESE

John Harvey, of Devizes, Wiltshire, keeps mainly small seedeaters most of which are Estrildids, and recently succeeded in breeding a Yellow-winged Pytilia *Pytilia hyprogrammica*, perhaps better known on dealers' lists as the Red-faced Pytilia. The birds built in a nest basket and the youngster was reared on a seed mixture, egg food and whatever insects the parents could catch in the aviary which measures 6ft x 4ft x 6ft high (approx. 1.8m x 1.2m x 1.8m high) with a shelter.

John had for some time longed to breed the Blue-billed Mannikin *Lonchura bicolor*. Over the years numerous nests were built and eggs laid, some of which hatched, but no young were reared. So, a friend, Brian Humphreys, of Trowbridge, offered to put the next clutch under a pair of his Bengalese. These were housed in a breeding cage 2ft long x 18in x 18in (approx. 61cm long x 46cm x 46cm) with a nest-box, and of the four eggs, three hatched and all three young fledged. Brian has found that Bengalese like these which take mealworms make the best foster parents. They run the mealworms through their beaks to extract the innards and discard the skins which Brian says are too tough for small seedeaters. He has found that Bengalese will generally learn how to do this by watching each other. The birds also have E.M.P. softfood and this was also fed to the young.

The three young mannikins closely resembled their parents except that they were brownish black, rather than glossy black and, rather than white, were yellowish, not unlike the colour that white surfaces become when subjected to cigarette smoke over a long period, as happens in the smoking room of a public house.

Brian keeps records of his birds so that he knows which pairs of Bengalese are the best foster parents. Using Bengalese he has also bred Red-billed Firefinches *Lagonosticta senegala*, Blue-capped Waxbills *Uraeginthus cyanocephala*, Cordon-bleus *U. bengalus*, Purple Grenadiers *U. ianthinogaster* and Red-winged Pytilias *P. phoenicoptera* (the following year the pytilias reared their own young).

During 1997 Brian has bred 12 Cuban Finches *Tiaris canora*, all of which were reared by their parents. They raised the first brood in a 6ft x 18in x 18in (approx. 1.83m x 46cm x 46cm) breeding cage, before being transferred to a communal flight which they shared with other waxbills and finches. The broods were of three, one, two, four and two young. Each time the pair used the same nest basket, using coconut fibre, horse and donkey hair to make the cup-shaped nest. The eggs were speckled with reddish brown. Within a week of the young fledging, the female started to lay again, and about two weeks after the young had left the nest, the parents started to attack them. They were fed a foreign bird seed mixture.

NEAR-THREATENED DUCK

The Pelew Island Grey Duck *Anas superciliosa pelewensis*, also known as the Lesser Grey Duck, has been identified as being of interest for the American Zoo and Aquarium Association's Anseriform Taxon Advisory Group. This duck is listed as near-threatened throughout its range by the IUCN Red List of Threatened Animals. The AZA Anseriform TAG would like to locate the holders of Pelew Island Grey Ducks in the USA and Canada. It has already located three males and placed them with Sylvan Heights Waterfowl in North Carolina. So now the priority is to locate sufficient females. It would like to keep a core breeding group at Sylvan Heights until the number has increased, but is also open to other options. If you would like to find out more about the management programme and how to participate, you should contact: - Doug Piekarz, Department of Ornithology, Wildlife Conservation Society, Bronx Zoo, 2300 Southern Blvd., Bronx, New York 10460, USA. Tel: 718-220-5053/Fax: 718-220-7114/E-mail :DMP96@prodigy.com.

* * *

REVISED EDITIONS

Australian Birdkeeper Publications has recently published revised editions of *A Guide to Asiatic Parrots* and *A Guide to Neophema & Psephotus Grass Parrots*. Both these new revised editions are priced at A\$23.95 each, plus A\$3.00 post and handling in Australia or A\$7.00 by airmail overseas. Further details are available from:- Australian Birdkeeper Publications, P.O. Box 6288, Tweed Heads South, NSW. 2486, Australia. Tel: 07 5590 7777 Fax: 07 5590 7130/E-mail: birdkeeper@birdkeeper.com.au/Internet: <http://www.birdkeeper.com.au>.

* * *

ANGLO-DUTCH AWARD

Double Dutch Avian Products, the sole UK agents for Witte Molen and the suppliers of other Dutch bird products, which has supported the Avicultural Society by advertising in our magazine, recently won the Tulip Computers Trophy for British small businesses in the 16th Anglo-Dutch Awards for Enterprise organised by the Netherlands British Chamber of Commerce. Double Dutch's new address is:- Pheasants Nest Farm, Smorral Lane, Bedworth, Warks. CV12 ONL. Tel:01676 540608/Fax:01676 540408.

* * *

A SUGGESTION FOR A NEW AWARD

by Philip Schofield

The Society's medal is awarded for the first captive breeding of a species in Great Britain or Ireland. When instigated, the award served to encourage aviculturists to breed birds. This was a novel idea - most birds were caught in the wild, and accounts of 'first breedings' furnished much new data about their habits. It did not matter if breeding stopped at the first medal-winning generation; there were always plenty more in the wild.

At the close of the twentieth century, much has changed. There are, quite simply, fewer species left to be bred 'for the first time'. Currently, the medal is available only to a small proportion of our members; those who cannot afford expensive 'new' species from the wild and those who live abroad are debarred from the award.

Let us look at some documented achievements in aviculture, that have made a lasting contribution to our pursuit. In the *Avicultural Magazine* for November-December 1950, Norman Nicholson described his work with the Red-headed Parrot Finch *Erythrura psittacea*. He bred these birds through 18 generations, starting with wild birds imported in 1932, and kept a stock going through the Second World War. The many Red-headed Parrot Finches of today may include descendants of Mr Nicholson's birds. As he said, '...it is a great achievement to win a coveted medal for a first breeding, but the continuous successful breeding of a species brings its own particular reward'. To my mind this reward is threefold:

1. The successful breeder passes on the knowledge of 'how to do it', enabling others to emulate his or her success.

2. They also pass on the birds that have been produced, to be enjoyed by future generations as aviary subjects and, if necessary, to replenish depleted wild populations.

3. Prospective bird breeders are inspired by the writings of those already enjoying success. In this context, I have a favourite article among my *Avicultural Magazine* back numbers (totalling about two-thirds of the run). This is 'My Birds in 1971', by Dr S. B. Kendall, in the January-February 1972 issue. There he described breeding successes in a collection restricted to five species. Most of us keep too many birds; I have over 30 species in a medium-sized town garden, and sometimes wish I had the self-control needed to give six times the attention to a sixth of this number. Dr Kendall had long term success with all five species, and many of their descendants must still be about. I have carried on in a small way with the Dwarf Turtle Doves *Streptopelia tranquebarica* that he cherished for 30 years.

The Gouldian Finch *Chloebeia gouldiae* is now one of our most popular domesticated species. This was not the case in 1932, when P.W. Teague wrote in the May issue of the magazine. This nine-page article would form an excellent introduction to anyone starting with this species today. Teague played an important role in the Gouldian's metamorphosis from a difficult imported subject to a more straightforward and established aviary bird. A further article, illustrated by Peter Scott, appeared in 1950, celebrating 25 years of continuous Gouldian culture. Australian finch breeders of today owe much to this pioneering enthusiasm.

In conclusion, I suggest that a new award should recognise 'services to aviculture', by an individual who leaves the rest of us with what appear to be three essentials for our hobby:

1. Birds to keep, enjoy and study.
2. Information to help us keep them.
3. Inspiration to keep and breed birds for our own pleasure, satisfaction and enlightenment, and to maintain and increase their numbers in the interests of conservation.

* * *

WHAT DO YOU THINK?

What do you think about Philip Schofield's suggestion for a new award? Why not write and let us know. You may also like to tell us what you think about the way in which the Avicultural Society is being run. One member recently expressed the view (to a Council Member) that there should be open meetings at which members can put their points of view. She feels that too many decisions are taken 'behind closed doors'.

This is a matter which has been raised from time to time before. While the Council is not against the idea of holding open meetings, the general feeling is that as so many members live abroad or for other reasons would be unable to attend such meetings, it would preclude the majority of members from participating.

Therefore, I suggested that members who wish to express their views on the way in which the Society is being run, should do so by means of 'Letters to the Editor', which can be published in the magazine (as they were in the past). This will give the entire membership the opportunity to join in any debate and express their views. It will also give those of us running the Society the opportunity to answer any criticisms and explain why certain things are done in the ways in which they are.

We also welcome your views on the magazine. Are you happy with the content of it, or would you like to see changes made to the magazine, and if so, what changes would you like to see?

Editor

SOCIAL MEETINGS

Saturday 4th April 1998, members of the Avicultural Society have been invited to visit Paultons Park, Ower, Romsey, Hampshire. Full details and a ticket application form have been included with this magazine.

The President's Garden Party will be held on Sunday 12.th July 1998. Full details and a ticket application form will be sent out with the next magazine.

NEXT MAGAZINE

The next magazine (Vol. 103, No. 4) will have articles about the partial hand-rearing of a Wrinkled Hornbill at Paultons Park, the breeding of the Vinaceous Firefinch in South Africa, the use of parrot foster parents at Loro Parque and some examples mutation, hybrid and other waterfowl plumages. It is also hoped to have articles about the Moluccan Cockatoo EEP, Bali Starling, the work of the International Fund for Avian Research and the breeding of the Lesser Flamingo.

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AVICULTURAL MAGAZINE



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VOLUME 103

No. 4

1997

THE AVICULTURAL SOCIETY

The Avicultural Society was founded in 1894 for the study of British and foreign birds in freedom and captivity. The Society is international in character, having members throughout the world.

Membership subscription rates per annum for 1997 as for 1996: British Isles £18.00: Overseas £21.00 (plus £6.00 for airmail). (U.K. funds please). The subscription is due on **1st January of each year** and those joining the Society later in the year will receive back numbers of the current volume of the AVICULTURAL MAGAZINE.

Subscription, changes of address, orders for back numbers etc. should be sent to:

THE HON. SECRETARY AND TREASURER, THE
AVICULTURAL SOCIETY, c/o BRISTOL ZOOLOGICAL
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Enquiries regarding membership should be sent to:

THE MEMBERSHIP SECRETARY, Stewart Pyper, 21, Primrose
Hill, Nunney, Frome, Somerset BA11 4NP.

THE AVICULTURAL MAGAZINE welcomes original articles that have not been published elsewhere and that essentially concern the aviculture of a particular bird or group of birds, or that describe their natural history. Articles should be preferably typewritten, with double spacing, and the scientific names as well as the vernacular names of birds should be given. References cited in the text should be listed at the end of the article. Line drawings, black and white or colour photographs which illustrate a particular point in the article will be used where possible and should be clearly captioned. If authors wish their eventual return, they must say so when submitting the article and write their name on the back of each photograph. Tables and graphs will also be used wherever possible but authors should be aware of the constraints of reproduction, particularly regarding the width of the page which is 105mm.

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1997

BREEDING THE VINACEOUS FIREFINCH

Lagonosticta larvata vinacea

by Neville Brickell

The Vinaceous Firefinch is widespread but local (no where is it common), occurring in tall grasslands with thorn bushes and among disused cultivation often adjoining streams, while in Gambia, West Africa, it is also often associated with bamboo thickets. Usually it is observed in pairs or small parties, occasionally in the company of Blue Waxbills *Uraeginthus angolensis* and Red-billed Firefinches *L. senegala*. *L. larvata vinacea* ranges from Senegal to southern Mali; *L. l. nigricollis* from eastern Cameroon to the Central African Republic, northern Zaire, Uganda and southern Ethiopia; *L. l. togoensis* from Ghana to northern and eastern Nigeria and western Sudan; and *L. l. larvata* is found in southern Sudan and western and central Ethiopia.

The distinctive markings of the male, with its black face mask and pale pink underparts are unmistakable in the field. The female lacks the facial adornment and has the crown, mantle and wing-coverts pale brownish grey, and her underparts are paler than those of the male and she has pinkish buff flanks. Juveniles have greyish brown upperparts and pale cinnamon-buff underparts and lack white spots on the flanks.

This species feeds on a variety of seeding grass heads, millet and, occasionally, insects and spiders. In captivity it will also accept small grain millet, in addition to canary seed, crumbled egg, ant pupae, small waxmoths, caterpillars and spiders (Nicoli, 1976), plus mound termites (Pinchin pers. comm.).

Apparently no nest in the wild seems to have been described, yet Serle's finding of the race *T. larvata nigricollis* has been documented, following his discovery of two nests, one in July and the other in August in northern Nigeria (Serle, 1938). They were found to contain clutches of three and four incubated eggs. One nest was constructed of withering grass and lined with seed heads and a few feathers. The second nest was not described, so one must presume it differed little from the first nest. This species of firefinch is parasitized by a species of indigobird *Vidua* spp.¹

The Vinaceous Firefinch has been bred in Europe, but due to the fact that females are virtually unobtainable in the USA (Buckley and Calvin, 1994), where consignments usually consist of over 95% males, in the company of various other species of firefinch, bird breeders have resorted to extreme measures such as hybridization. Cotterell (1964), who bred the Vinaceous Firefinch in the UK, described the nest as being barrel-shaped and constructed of grass stems and coconut fibres etc., lined with feathers, and having a small side entrance. Nests are usually sited in clumps of grass or heather or in small shrubs, and only rarely in artificial sites such as nest-boxes and wicker baskets.

George Pinchin was first to breed the Vinaceous Firefinch in Africa. His birds were housed in an aviary measuring 1m wide x 3m deep x 1.8m high (approx. 3ft 3in x 9ft 10in x 5ft 11in), with two-thirds of the top covered with clear fibre glass sheeting. The only living foliage consisted of a large Sacred Bamboo *Nandina domestica* (indigenous to East Africa). Beneath the enclosed shelter dried Khakiweed *Tagetes minuta*, a sub-herbaceous, strongly aromatic summer annual, commonly referred to by local birdkeepers as curry bush, was packed tightly into one corner which was used as the nesting site.

The nest was built entirely of Tef Grass *Eragrostis tef* and then lined with coir and a few feathers dropped by a pair of Cuban Finches *Tiaris canora*, the only other occupants of the aviary. The clutch of three eggs produced one male and two female young. Clutches of four, and sometimes five eggs, with an incubation period of 11-12 days and a nestling period of 18-20 days have been recorded (Goodwin, 1982).

Acknowledgement

To George Pinchin with my gratitude.

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¹According to Robert B. Payne, *Field identification of the indigobirds* (Bulletin of the African Bird Club, 3, 1:14-24), which I recommend to those interested in indigobirds (combassous) and their host species, the Black-faced Firefinch *L. larvata*, of which the Vinaceous Firefinch and the Masked Firefinch are treated as named races, is parasitized by the Black-faced Firefinch Indigobird *Vidua larvaticola*. Ed.

WATERFOWL MUTATIONS, HYBRIDS, PLUMAGE AND THE COLOUR PURPLE

by Philip Schofield

Some 30 years ago, when I started to keep ducks, the only non-domestic species with a well established colour variant was the Bahama Pintail *Anas bahamensis*. Silver Bahamas are still widely kept today and since then many other species have produced colour mutations which are now freely available. A leading dealer's current price list has on offer mutations of seven species. Some others, such as the blonde and silver variants of the Egyptian Goose *Alopochen aegyptiacus*, would be kept more widely if they belonged to benign and peace-loving species.

Little or nothing appears to have been written about colour inheritance in ornamental waterfowl mutations. My own experience in this area is limited to three species. A pair of silver Carolinas *Aix sponsa* were obtained from someone who had repeatedly failed to rear the ducklings from them. I therefore split the pair, putting each one to a visually normal mate, expecting to produce all normals in the first generation. The silver female and her normal mate fell victims to an enterprising Fox. However, the silver drake and his normal duck gave me seven young the following year, four normal males and three silver females. This led me to think that their normal mother must have been 'split' for silver, carrying what I then believed to be a recessive mutation. I was wrong. One of these normal drakes, paired to an unrelated normal female the following year, produced silver daughters. This demonstrates that silver Carolinas are in fact sex-linked. The 'split' male of a recessive mutation could not produce mutant daughters by a normal female. Reference to any table of sex-linked Budgerigar *Melopsittacus undulatus* mutations will demonstrate how this works.

Sex linkage was again demonstrated in the silver form of the Mandarin Duck *A. galericulata*. Here a normal male with a silver female produced all visually normal ducklings. This result could have been expected from either a recessive or a sex-linked mutation. However, when a young male of this F1 generation was paired back to his mother, silvers of both sexes and normal males resulted. There were no normal females, leading me to the conclusion the silver mutation is sex-linked in both Mandarin and Carolina Ducks.

Moving on to the Red-crested Pochard *Netta rufina*, I expected the blonde mutation in this species to be sex-linked, partly from its superficial resemblance to the cinnamon variety of the European Greenfinch *Carduelis chloris*. Two pairings, each of a blonde male to an unrelated normal female, proved me wrong. Normals and blondes of both sexes appeared from each

pair. Had the blonde variety been sex-linked (given that female birds cannot be 'split' for a sex-linked mutation), all young females would have been blonde and all males visually normal. Therefore this is a straightforward recessive mutation.

The production of hybrids is not to be encouraged. However, when they occur accidentally, the results can be attractive. Purple is an unusual colour in birds, but I have seen a bright iridescent purple on two duck hybrids. The orange head of the Red-crested Pochard combines with the green head of the Mallard *A. platyrhynchos* to produce a purple head with a slight crest. A hybrid of this parentage, kept with surface feeding ducks, was not seen to dive for food (all waterfowl dive when 'playing') until some newly fledged Red-crested Pochard were introduced. Seeing their diving activities, the hybrid immediately joined in, the latent abilities inherited from one parent having been awakened. Both sexes of an accidental mating of a male Ringed Teal *Calonetta leucophrys* with a female Brazilian Teal *Amazonetta brasiliensis* showed a brilliant purple speculum. This was the unexpected combination of the green 'wing-mirror' of the Ringed Teal with the bronze one of the Brazilian Teal.

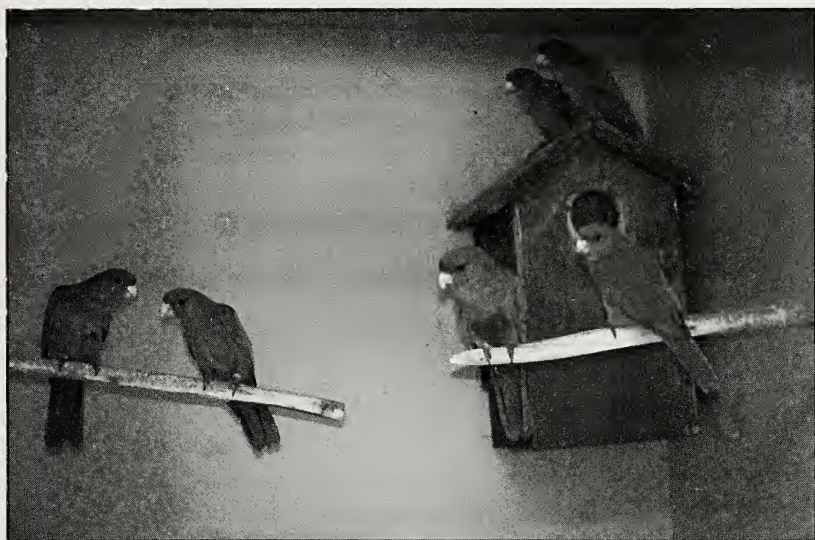
One expects a bird's plumage (in a 'natural', non-mutant form) to be the same on both sides of its body. The black primary flight feathers of a Lesser Snow Goose *Anser caerulescens caerulescens* should therefore be the same in number on its right wing as on its left. When catching my Lesser Snow Goose gander to clip his wing after the summer moult this year, I was surprised to note seven black primaries in one wing, and nine in the other. The rest were white. I have not handled other full-winged Lesser Snow Geese to see if this asymmetry is a regular occurrence; my others are pinioned so are of no help. On the subject of waterfowl plumage, I can tell when a naturally incubated clutch of Mandarin is hatching. The drake, who has been guarding his mate throughout the incubation period, moults his first wing-fan (the orange modified tertiary feathers) on the day of hatching and loses interest in his mate and offspring at this stage. I would not suggest this is the invariable sequence of events, merely that it has happened with every pair of Mandarins that I have allowed to incubate their own eggs.

Philip Schofield, who is an Avicultural Society Council Member, started keeping what he calls his 'back garden' collection of birds in 1967. He specialises in Galliformes, waterfowl and seed-eating pigeons, and also has Demoiselle Cranes and a few softbills.

THE PURPLE-BELLIED PARROT *Triclaria malachitacea*: ITS NATURAL HISTORY AND AVICULTURE

by Rosemary Low

One of the most distinctive of neotropical parrots, the Purple-bellied *Triclaria malachitacea* is unique in appearance and behaviour. It is the only member of its genus. An extremely beautiful bird, it has uniform rich dark green plumage, apart from the blue underside of and blue tip to the long, broad tail, and has large brown eyes. It is a sexually dimorphic species, with adult males distinguishable by the large patch of violet on the abdomen. The species is 12in (30cm) long of which the tail accounts for approximately 5in (12cm). It weighs about 140g. This species is usually called the Blue-bellied Parrot in ornithological literature.



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**Pair of Purple-bellied Parrots and their four young in the breeding
centre at Palmitos Park**

My association with this species spanned 27 years, with a break of ten years between 1977 and 1987. Since leaving Palmitos Park in 1995 I no longer have this parrot in my care - and it is one which I miss very much. As it has always been rare in aviculture, I feel privileged to have kept it in my own collection and to have looked after pairs at Loro Parque, Tenerife, and Palmitos Park, Gran Canaria.

Distribution

The Purple-bellied Parrot is endemic to the Atlantic forest region of south-eastern Brazil. It occurs in Bahia, Minas Gerais, Espirito Santo, Rio de Janeiro, Sao Paulo, Parana, Santa Catarina and Rio Grande do Sul. There are two records from Argentina (Collar, Crosby and Stattersfield, 1994).

Status and threats

It is considered to be endangered. The main threat is habitat loss; trapping for trade is also suggested as a reason for decline (Bencke, 1996). If so, the mortality rate must be extremely high because this species has always been rare in aviculture. Legal export of Brazilian birds ceased more than 30 years ago; nevertheless, this has not stopped the export of certain other parrot species from the same region. It is difficult to believe it would be locally popular as it cannot 'talk' and has a personality which is totally different from the usual companion parrots in the region - Amazons and macaws. Virtually all parrots endemic to Brazil's Atlantic forests are threatened or endangered as a result of loss of habitat. Bencke states that in Rio Grande do Sul illegal clearing of forests on a small scale, to provide wood for curing tobacco and fuel for winter, is still very common. However, as the forest fragments are small and easily accessible to trappers, the theft of chicks from nests might become a more serious threat in the future. Three nests found in Santa Cruz do Sul were all at a low elevation - 3m to 5m (approx. 10ft-17ft) above ground. This factor and the accessibility of remnant forest patches results in higher rates of nest poaching than occurs in larger forest areas.

Habitat

This is a true forest dweller. According to Collar, Crosby and Stattersfield, it lives in the shade of moister valleys (300m-1,000m (approx. 984ft-3,280ft)) and ventures out seasonally to lower areas. They state: 'Its rarity (apparent low density and/or patchy distribution) appears to be related to this habitat preference, but also to overall habitat loss and to competition with man (who destroys the plant in the process) for fruits of the palm *Euterpe edulis*, a main food source (Collar et al., 1992).'

Pizo, Simao and Galetti (1995) studied six parrot species in the Atlantic forests, including *Triclaria*. They observed only one of these species, the Red-bellied Conure *Pyrrhura frontalis*, feeding on the fruits of *E. edulis*. Bencke states that 'Several evidences clearly indicate that the fruits of *Euterpe edulis* are not a particularly important food resource for *Triclaria* in Rio Grande do Sul.' He relates that in the central-eastern part of this state, the Purple-bellied Parrot is mostly associated with the humid broadleaf forests along the escarpment, which are now severely fragmented. 'It is

presently restricted to the largest remnants of mature forest. Based on the amount of suitable habitat available, the number of *Triclaria* inhabiting the escarpment in the centre-east of the state was estimated at a maximum of 10,000 individuals, a numerous and so far unprotected population.'

Bencke states that on the Serra Geral escarpment (eastern-central Rio Grande do Sul) there is now a complex mosaic of agricultural areas and small forest remnants which are connected to a varying degree. *Triclaria* is now restricted to the largest remnants of mature forest, almost all of which are confined to hilltops and steep mountain slopes. It uses secondary woodlands and narrow strips of second growth between plantations. Apparently it tolerates secondary woodland only if it is connected or close to tracts of essentially mature forest. In July and August the Purple-bellied Parrot moves to second growth stands to coincide with the maize harvest. Maize is one of its main food items at this time. Unlike other parrots, it lives primarily in the forest interior, where it often occupies the lower strata.

Note that the words 'moister' and 'humid' are included in descriptions of its habitat. Most people who have not visited the Atlantic forest area of Brazil may not be aware that this is a wet region which, unlike the more northern regions of Brazil, is quite cool. I was very briefly in the area in 1988 (for one day!) and the heavy rain and cool climate reminded me of the UK. It helped me to understand why, in captivity, the Purple-bellied Parrot shows a marked dislike of strong sun and why, in the UK, it would sing joyfully on cold, frosty mornings. It is not a species which seeks the sun.

Social behaviour

According to Bencke, this parrot is normally found in pairs (45% of all records where the number of birds could be estimated). However, up to three pairs may gather at certain times (usually early morning). 'These birds vocalise continually and frequently engage in agonistic contacts. The individual pairs, however, remain segregated within the group and often respond to each other with a variety of vocalisations.'

Food sources

The seeds and pulp of several common native plants, especially those of the families Euphorbiaceae and Myrtaceae, and cultivated maize, are the main foods in central-eastern Rio Grande do Sul, according to Bencke's study. Some of these are 'keystone food resources' for *Triclaria* because they fruit, and are consumed, over extended periods. They are available in large quantities during periods of low overall fruit diversity or constitute the main food item during the breeding season. Purple-bellied Parrots were not observed to feed on buds or nectar, possibly because they are infrequent items of the diet, although these items are often listed in the literature. They were seen to eat wood and bark.

Avicultural history

The first reference I can find to this species relates to a single bird kept by a well-known member of the Avicultural Society, Hubert Astley, in 1906. David Seth-Smith, Editor of the *Avicultural Magazine* for many years, visited Hubert Astley and his wife Lady Sutton at Benham Park, Newbury. His wonderful collection there included a pair of Lear's Macaws *Anodorhynchus leari*. Mr Seth-Smith, who was Curator of Birds at London Zoo, noted: '... perhaps the rarest bird in the whole of Mr Astley's fine collection was a small Parrot from South America, which he calls the Violet-bellied Parrot *Triclaria cyanogaster*. It is a bright green bird with a large patch of violet blue on the abdomen and bright reddish-brown eyes. I have never before seen or heard of an example of this species in captivity' (Seth-Smith, 1907).

I can find no further reference to this species in aviculture in the first half of the century, except for a single bird at Berlin Zoo. In 1961 an Essex importer received a pair. In 1964 or 1965 Herbert Murray, also of Essex, England, and a valued supporter of the Avicultural Society for many years, imported five birds for his own large collection. I can vividly recall seeing them in one of his huge aviaries. They were so unlike any other parrot with which I was familiar! They hawked flies! I was very taken with their beauty, especially their large dark eyes. When Mr Murray advertised a pair in 1968 I was the only person to answer the advertisement! The pair cost me £30 (approx. US\$48) - probably the greatest avicultural bargain in which I ever invested. They enchanted me.

Since that time I can literally count on the fingers of one hand the number of collections in which I have seen this species outside Brazil - Walsrode, Loro Parque, Palmitos Park and one private collection. The Purple-bellied Parrot has a reputation for being very hard to establish when newly imported. One dealer in Paraguay reputedly said he did not like to handle this species because it always died.

Requirements in captivity

The aviary should be large enough to enjoy the skilful flight of this species. Ideally it would be large and planted, or surrounded with trees. It should provide good cover from strong sunlight; an enclosed shelter is necessary in a temperate climate. The Purple-bellied Parrot is actually a hardy species which tolerates well low temperatures. As already mentioned, it has an intense dislike of strong sunlight. It needs a frequent source of fresh branches for gnawing. Without this, some birds may suffer from an overgrown beak.

Diet

Loss of recently captured birds was probably attributable to their reluctance to sample the foods which trappers would offer. Mr Murray's birds thrived because they were placed in a large planted aviary. Every week they were provided with saplings 8ft (2.4m) long, which had been cut especially for them. They fed on the bark and leaves in 'a frantic manner'. They took fruit only if it was hung from a perch. When I first had my pair, I would attach grapes to a branch. They also took nectar with added vitamins, spray millet, sunflower, peanuts, pine nuts, niger and canary seed. Various fruits, berries and corn on the cob were relished eventually. The male's most favoured items, in order of preference, were cherries, pips from grapes, buds or bark from trees, and spray millet. At Palmitos Park the Purple-bellied Parrots would eat a wide variety of fruits, including guavas and cactus fruits. The usual greenfoods, and raw vegetables such as carrot and courgettes, were also eaten. The basic mixture contained seeds and cooked maize and cooked beans, but I do not recall them being very fond of the latter. Fresh corn was a favourite item. I never saw them hawking insects - but this behaviour would be possible only in a very large aviary. I especially remember their fondness for guavas and was interested to read the list of plant species which parrots at Parque Estadual Intervales in south-eastern Brazil had been observed to eat (Pizo, Simao and Galetti, 1995). The only item listed for *Triclaria* was the seed of the guava *Psidium guajava*.

Vocalisations

One of the most wonderful and certainly the least parrot-like characteristic of this parrot, is its song. According to Dr Moojen (1960), the Indian name of this species, *Sabia-cica* means a kind of thrush, or robin, on account of its 'melodious, soft thrush-like song'. He further states that 'Blue-bellied Parrots easily learn to sing new songs or to imitate the human voice, like most parrots'. While I am not surprised that they could be taught to whistle new tunes, they appear to me to have no propensity at all to imitate the human voice.

In my long out-of-print *The Parrots of South America* (1972) I recorded of my male: 'His song is clear and thrush-like and consists of a few notes repeated quite loudly. He can also whistle very quietly.' This quiet whistle is comparable to the sub-song of a Blackbird *Turdus merula*, for example. Females may also whistle quietly - but I have heard the full song only from a male.

In addition to the melodious notes, Purple-bellied Parrots have a 'chack-chack' alarm call. The courtship display of the male, in which he opens his wings, and lowers his body, includes a series of notes which might be interpreted as 'chit-chit-chit-chit-choowit'.

Behaviour

This is perhaps closest to that of the Red-capped Parrot *Pionopsitta pileata* or other members of this genus; *pileata* is the only one with which I am familiar. However, in flight it is nothing like the heavy-bodied *Pionopsitta*. *Triclaria* shows extreme manoeuvrability. I recorded of my male: 'He is unafraid, rather than tame, and will display when I talk to him. He fans his tail, ruffles his short head feathers, dilates the pupils of his large brown eyes and walks with deliberate tread along the perch, bowing low until his beak almost touches the perch. When he reaches the end of the branch he flies off and returns immediately to repeat the performance.' (Low, 1972).



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Adult female Purple-bellied Parrot

Males can be very excitable and a little aggressive when displaying. The tail is spread and the wings may be opened and the violet feathers of the abdomen are puffed out. But it is the eye blazing and the rapid head shaking which indicate most clearly the male's excitement. He may also rub his beak on the perch. A responsive female will also shake her head and sing quietly. So different from an Amazon, for example.



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A female hand-reared by the author at Loro Parque - it is aged 32 days

Breeding

This species does not seem difficult to please regarding nest-boxes. The female at Palmitos Park would lay in April or May. The nest-box was not large - approximately 8in (20cm) square and 12in (31cm) high, as I recall. There were two pairs when I was at Loro Parque. In 1988 one female laid her first egg on the 7th January and the other female laid on the 20th January. These females laid four eggs, whereas the female at Palmitos Park always laid six eggs! Eggs were laid on alternate days. Incubation probably did not commence until the second egg was laid. The first egg would usually hatch 30 days after it was laid and the other eggs after about

28 days. The last egg in a clutch of six can hatch as long as 34 days after it has been laid, presumably because incubation is more erratic after most of the chicks have hatched. However, the true incubation period under optimum conditions is much less - as short as 25 days in one egg which was placed in an incubator.



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Six chicks - from 11 days to newly hatched - in one nest at Palmitos Park

Chick growth

Newly hatched chicks have long off-white down on the back, a little on the nape and virtually none on the head. The beak is almost unpigmented, with a very faint brown tinge. They weigh about 6g. After a few days the protrusions at the side of the upper mandible (they cannot be described as pads) are quite pronounced. The light grey and mid-grey second down erupts at about two weeks. The ears open at about 12 days but the eyes do not open until about 18 days. The wings and the head are the first areas to feather. Chicks were ringed with 6.5mm rings at about 14 days. At about three weeks the feathers are just starting to erupt. The area over the crop and the neck is the last to feather. The highest weight I recorded in parent reared young was 156g at 32 days, which was about 10g more than average. After the age of about five weeks chicks were not weighed as they disliked

being handled. The feet start to darken at about one week old and are dark grey on fledging. The young spend eight weeks in the nest.

Several young had to be removed for hand-rearing, in order to be treated for bacterial infections. They were eating well on their own by seven weeks and were independent at about nine weeks old, when they weighed between 120g and 148g.

Immature plumage

Newly fledged young resemble females. They cannot be sexed by the colour of the abdomen. However, if a few feathers are plucked from this area, the replacement feathers should indicate their sex. The main feature in which immature birds differ from adults is in the colour of the narrow area of bare skin surrounding the eyes, which is white, whereas in adults it is grey.

General remarks

The Purple-bellied is not a typical parrot. It has a grace and, in flight, manoeuvrability more reminiscent of a softbill. Neotropical parrots, as a group, show homogeneity - they are remarkably similar in many aspects (whereas, Australian parrots, for example, are not). The Purple-bellied Parrot might be described as the odd one out. It is a most attractive aviary bird, with its beautiful dark green plumage and unique and pleasing vocalisations. Its lack of a pronounced area of bare skin around the eyes and the large size of the eyes are other features which set it apart from most neotropical parrots. It seems destined always to be rare in aviculture; its avicultural future seems uncertain due to the very small numbers in Europe - and perhaps none elsewhere outside Brazil.

With continuing loss of habitat, its status in the wild can only deteriorate. Because it is such a distinctive species, more effort should be made to try to secure its survival - in its natural habitat and in aviculture. Bencke (1996) described public awareness activities which have been targeted at the urban section of the community in Santa Cruz do Sul and Lajeado. These included a newspaper article and a television programme. A short video was produced documenting the plight of this parrot in the region. Bencke himself met with state politicians to explain alternative solutions to the use of wood from native forests in the curing of tobacco leaves. He pointed out that first world importers of tobacco leaves originating from the Santa Cruz do Sul region should be made aware that the tobacco is planted in areas where a globally threatened parrot species occurs.

There follows on the next page a table with details of two chicks hand-reared at Palmitos Park.

	Chick N° 1	Chick N° 2
Age in days	Weight in grams	
9	-	48
11	49	-
12	-	55/59
13	-	61/66
14	61/66	66/72
15	70/76	70/74
16	74/80	76/82
17	76/82	80/88
18	86/92	86/96
19	92/102	88/96
20	96/102	94/103
21	100/112	96/112
22	110/120	94/108*
23	102/110*	96/106
24	102/116	94/102
25	106/112	92/120
26	102/114	not recorded
27-36	no weight records (author absent)	
37	not recorded	138/152
38	not recorded	134/154
39	156/180	138/154
40	150/176	140/158
41	156/175	140/158
43	160/176	144/153
45	162/174	140/160
47	164/182	142/156
49	166/184 eating well	140/146
51	162/176	136/140
55	156/refused food	132/158
62	148	132/136
65	independent	nearly independent

* bacterial infection; treated with Chlamoxyl.

Weights of two chicks hatched at Palmitos Park in 1991: they were the oldest of five chicks hatched in one nest and were removed for hand-rearing aged 13 and 11 days. Weights shown are those before and after the first feed of the day. Food consisted of a mixture of Milupa baby cereal, wheat germ cereal, Nekton Lori and liquidised papaya.

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SOME EXAMPLES OF THE USE OF FOSTER PARENTS AT LORO PARQUE

by Roger G. Sweeney

The 1996 breeding season at Loro Parque was particularly successful, both in the total number of birds reared and in the diversity of taxon which reproduced. While our main objective is to have as many as possible of our breeding birds rear their own chicks, with such a large number of birds being reared each year, it is unavoidable that a proportion of these will require artificial neonatal care, if they are to survive. The most frequently used approach in such cases is to hand-rear the chicks, which we do with great success.

An alternative solution often available to us is the fostering of eggs or chicks from unreliable parents, with a different pair of birds which have a proven record as good parents and which, for any one of a number of reasons, are incubating eggs which are infertile or are of far less importance than the eggs which are in need of reliable foster parents. In recent years we have had cause to use foster parents on several occasions and the results have been very good.

With some species which are kept communally, or when several pairs are maintained in the collection, it can be a simple solution to foster eggs from an unreliable pair of parrots, to a different pair of the same species. This should be done only when the foster parents have no viable eggs of their own, otherwise if eggs are given to a pair which have fertile eggs of their own, problems can arise later when trying to establish the true parentage of the chicks. The Greater Vasa Parrot *Coracopsis vasa* is one species where we have some pairs which either break their eggs or are unreliable in incubating them, by contrast other pairs are excellent parents. We have been fortunate for the past two years in that two spare females (which are housed together) have laid and incubated eggs consistently. In 1995 and in 1996 we gave these two females fertile eggs from other Vasa Parrots which are unreliable parents and so far the two have a perfect record in rearing chicks from eggs that they have fostered.

When birds of the same species are not available as foster parents, then fostering with birds of the same genus, or of a very closely related genus, can produce good results. For several years at Loro Parque it has been common practice to foster rare *Amazona* species with common species of *Amazona*, which has always been done with a very high level of success. In 1996 13 Red-browed Amazon *Amazona rhodocorytha* chicks were reared by foster parents. The chicks were shared between six different sets of foster parents, two pairs of Green-cheeked Amazon *A. viridigenalis*, a pair

of Blue-fronted Amazon *A. aestiva*, a pair of Yellow-fronted Amazon *A. ochrocephala*, a pair of Blue-headed Pionus *Pionus menstruus* and a pair of Maximilian's Pionus *P. maximiliani*.

A good example of the fostering of chicks between closely related genera is that of the Hyacinth Macaw *Anodorhynchus hyacinthinus* which is now being reared with increasing success at Loro Parque. In 1996 nine chicks were reared. One of the reasons why the breeding of this species had not been successful in previous years is that only one of our breeding pairs can be considered to be reliable parents, other pairs frequently demonstrate poor incubation, with eggs being damaged or not incubated. In such cases we continue to look at the husbandry of these pairs to see if we can improve their nest site provision and surroundings and to see if we can increase the chances of them rearing their own chicks. At the same time we looked this year to ensure that an early clutch of eggs from each of these pairs were removed and given to foster parents. Two pairs of Green-winged Macaws *Ara chloroptera* were chosen as the foster parents and in both cases the eggs hatched and the resulting chicks were cared for perfectly. Hand-rearing of Hyacinth Macaws is still practised at Loro Parque on occasions when we lack other alternatives, but our preference is for parent rearing or foster rearing. Another good example of fostering between different genera was undertaken in 1994, when a Horned Parrakeet *Eunymphicus cornutus* was reared by a pair of Golden-mantled Rosellas *Platycercus eximius*, made necessary because our exhibition pair have consistently lost within the first day of life, the chicks that they have hatched. The chick grew and fledged without problems under the care of the rosellas. This again demonstrates the flexibility of good foster parents if they are well managed and carefully observed.

While closely related species are normally the best option when potential foster parents are being sought, some consideration of the comparative physical size, if such a difference exists between the species concerned, is an obvious fact that has to be taken into account. When looking at the possibilities for fostering eggs of the Golden Conure *Guaruba guarouba*, we considered several different pairs of closely related conures of the genus *Aratinga*. The decision was finally based on balancing the benefits of choosing the largest species of *Aratinga* which was breeding at the time, against relying upon the experience of the pair of *Aratinga* with the best record of proven parenthood. We decided to opt for experience and a pair of Sun Conures *Aratinga solstitialis* with a prolific breeding record were our choice. The Sun Conure is closely related to the Golden Conure, having a similar physical appearance, feeding response, incubation time and chick growth rate. Our one concern was that the larger size of the Golden Conure chicks might mean they would prove too large a workload for the foster

parents. While Sun Conures can easily rear three or four chicks of their own, three growing Golden Conure chicks might prove too great a burden. On this occasion the foster parents carried out their task very successfully, with our only concern being the weaning period in the first week after the chicks had fledged. This was an exceptional case and normally we would not have left all of the chicks with the foster parents as the chicks increased in body weight, but would have removed either one or two to ease their task.

A much more unusual example of the flexibility in the use of foster parents was the use of a pair of Derbyan Parrakeets *Psittacula derbiana* to successfully incubate Gang-gang Cockatoo *Callocephalon fimbriatum* eggs, and then rear the resulting two chicks for the first two weeks of their lives, until the chicks were removed to the nursery once they had reached a large size. This was a particularly memorable case of using foster parents, bearing in mind the obvious differences between the genera *Psittacula* and *Callocephalon*, but as long as the chicks are removed after the first two weeks, such differences are not an obstacle.



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Three Golden Conure chicks with Sun Conure foster parent

In summary, foster parenthood is an extremely useful husbandry method if the following points are given careful consideration when selecting the pair of birds to act as foster parents:

1. Past history of parenthood - Obviously, only birds with a very good record as successful parents should be considered as potential foster parents.

2. Health status - As an extension of considering the past history of parenthood, only a pair of birds which have a clean health history should be considered as foster parents, particularly if a rare or endangered species is involved. The potential foster parents being considered should have no history of bacterial or fungal infections, Chlamydia, protozoa, or intestinal parasitic infestations, and should obviously be free of any virus.

3. Size - As already mentioned when describing the rearing of the three Golden Conure chicks by a pair of Sun Conures, size differences between the parents of chicks being fostered is not necessarily a prohibiting factor. However, careful thought should be given if a significant size difference is involved and careful observation of the chicks' development will be required to make sure that as the chicks grow and increase their body weight and food intake, that this does not become a task with which the foster parents cannot cope.

4. Appearance and behaviour - In my experience, the appearance of the chick is not a critical factor, so long as eggs are transferred beneath the foster parents and not a partially developed chick. I know of several instances in which chicks of a quite different physical appearance have been reared by foster parents. A more significant consideration is the behaviour of the chick and foster parents, particularly in the feeding response. Most psittacines have fairly uniform chick food-solicitation behaviour, but what can vary is the force with which the feeding action is undertaken. Some species (such as *Aratinga* conures) with a forceful feeding action may injure chicks of a more delicate species which they are trying to rear.

If these four main points are taken into account, then foster parenthood is a useful and interesting avicultural husbandry technique which can have a high level of success.

THE PARTIAL HAND-REARING OF A WRINKLED HORNBILL *Aceros corrugatus* AT PAULTONS PARK

by James Summers

By the 8th June 1996, the preliminary nesting duties had all gone very well, the female was walled-in the nest-box and the male was feeding her while she was inside. Then began the guessing or the search to find the person with the best hearing, to try to hear if there were young in the nest-box. By the noise and the amount of food being taken on the 13th July 1996, it was presumed that there was at least one youngster alive and well inside. To satisfy this extra need the number of feeds were increased from three to four a day. The diet consisted of fresh fruit - apples, bananas, grapes, papayas, pears, peaches, nectarines, tomatoes and berries when they were available. They also received mealworms, locusts, an insectivorous mixture and SA37 (a vitamin and mineral supplement). The grapes and locusts were always the first foods to be taken. In time, pinkies, pups and then adult mice were added to the diet.

Being unsure of the number of days Wrinkled Hornbills spend in the nest-box, we were anxious but not unduly worried about the length of time that they had spent in the nest due to the fact that, hopefully, the young (be there one or two) would be bigger and more fully feathered, when they eventually emerged.

The day arrived when the female released herself from her incarceration inside the nest-box. She was very clean and looked in excellent condition, as did one of the two young. We found out about the second youngster when we inspected the nest-box as soon as the female emerged. The second youngster, 'F.T.', as it became known, was only partially feathered on the head, wings and tail. Except for a few pin-feathers, the body was mostly bald, with the skin a very dark purple (almost black) and there was what seemed to be an air sac on the back, which if touched, would rise and fall.

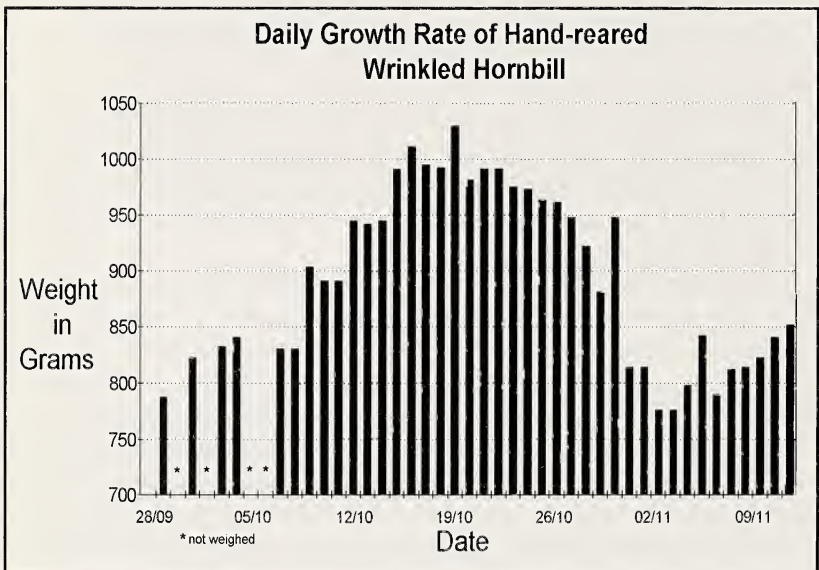
It was decided to remove it from the nest-box, for two main reasons:-

1. In late September nights can be very cold.
2. We did not know if the parents would continue feeding him (his sex was determined later). Also, his belly was huge and looked almost abnormal, and when he was standing, it rested between his feet.

He weighed approx. 675g. He was put in a plastic water tank which measured 36in x 18in x 24in (91.5cm x 46cm x 61cm). A blanket was placed over the top, as it was thought that for a while, the darker it was inside, the better it would be. He would not feed on the first day, but we

thought there was no cause for concern as he looked so healthy, even though he was bald. The second morning he started to take food, albeit hesitantly, and was given the same diet as the adults, but with extra pinkies. By the end of day two (28th September 1996) he was feeding well.

He got to know me very quickly, but in anyone else's presence was very wary and stopped feeding and just watched them. For the first few days, he fed six or seven times a day and was very vocal when feeding, and luckily I had no trouble from neighbours being woken by him. During the day 'F.T.' was kept in a warm room in which there were everyday noises and apart from a little shuffling about in the box, he seemed quite settled. I did find, to my cost, that at the merest hint of light getting into the box, he would defecate through the opening. When I was at home during the evenings and on my days off etc., I left the radio playing as he seemed to settle a lot easier with a little noise in the background. The only noises he made were sighs and twitters, which were I thought, almost sounds of contentment.



At first he was not weighed routinely, but as from 3rd October 1996, he was weighed each day and, as from the 7th October, each feed was also weighed and at the end of the day the total weight of the food was recorded, as can be seen on the accompanying graph. As the days went by all seemed to be going well, his weight gain was good, as was his feather growth, with new pin feathers coming through and his belly was not so large, and he was beginning to become alert and very aware of what happened around him. I tried giving him a stuffed sock for company, but it was used as a

toilet. His weight gain remained generally good, but with a few peaks and troughs, which were perhaps to be expected. However, I was unprepared for what started to happen on the 16th October 1996, when his weight began to drop. It had reached the 1kg mark, but overnight fell by 15g, which was not drastic at first, but by the 25th October, his weight was down to 962g. I recorded in my daily diary: The way that 'F.T.' behaves I feel sure his weight loss must be normal, for he is bright and his feather growth is excellent. However, in spite of this in the back of my mind I cannot help feeling that maybe something is wrong!



The author with 'F.T.'

Even at approx. 15 weeks old he was picking up droppings and fruit and practising his 'walling' (or plastering) technique. Another strange thing was his ability to regurgitate apple. Being a fussy feeder and knowing that more interesting foods such as banana and grapes, his favourites would follow, he would eat a little of the apple, then the rest of the food, but when he was finished, he could somehow distinguish the apple from perhaps 100g of food, and regurgitate it. By this time I was leaving a bowl of food with him, but his weight continued to drop. However, he looked healthy and had good breast muscle growth. I was now trying to feed him only three times a day. As from the 30th October, he remained at the park and I made no more trips home with him. By the 4th November, he was eating very well, his feather growth was almost complete and getting plenty of flying practise was the top order of the day. The 11th November his weight had gone back up to 850g, having at the beginning of November fallen to 774g. The rate at which he had put weight back on was quite extraordinary. I know that during weaning birds can lose weight, but nothing had prepared me for what happened. The 11th November was the last time that 'F.T.' was weighed, as he had begun to get a little too stropky to continue, besides which I thought that to continue would not be to his benefit.

Daily Feed Record in Grams

DATE	7.30am	10.00am	2.00pm	5.00pm	8.00pm	10.00pm	TOTAL
7th Oct	?	88	104	100	120	114	526
8th	104	124*	166	134	136	120	784
9th	108	124	104	88	100	DNF	524
10th	134	124*	138	136	132	80	746
11th	114	62	120	116	126	70	508
12th	106	106	118	144	134	52 late	660
13th	122	84	108	94	110	DNF	528
14th	126	138	124	134	104	68	694
15th	110	104	114	90	98	40	556
16th	90	120	108	100	86	DNF	504
17th	80	74	110	90	100	DNF	456
18th	114	112	115	DNF	108	36	485
19th	84(66)†	181(60)†	140	112	(9pm) 130		647
20th	146†		74	98†	92†	130	540
21st	42	72	138		72	92	416
22nd	240†		114	158	DNF		512
23rd	100	90	42	136	96	DNF	444
24th	128	106	112	62	98	46	552
25th	106	104	106	10*	136	DNF	462
26th	95	122		88	118	76	489
27th	134	132		100	102	DNF	468
28th	?	100 + 22 (Bowl)		42	60	106	330
29th		*Only 50 grams all day.					50*
		Feeding on own now.					
30th	42			116	50		208
31st		Leaving bowl in all the time					228
TOTAL							
1st Nov		214					
2nd		265		Key:-	*	Note.	
3rd		230			†	Left bowl in.	
4th		228			DNF	Did not feed.	
5th		400					
6th		380					
7th		400					
8th		426					
9th		430					

Thanks to the hard work of the keepers at Paultons Park, I am proud to say that 'F.T.' is now very happily paired with a Wrinkled Hornbill from Chester Zoo and the two are living at Rode Tropical Bird Gardens, Somerset, under the watchful eye of Mike Curzon, who keeps me up to date with the male's progress.

There follows a diary recording the hand-rearing of the young Wrinkled Hornbill, which was removed from the nest Friday, 26th September 1996, when it weighed approx. 675g.

- 786g 29/9. He seems fine.
- 822g 1/10. He is fine. He has a big air-filled sac on his back.
- 832g 3/10. He fed well all day until his last feed. His droppings are watery, perhaps because he has eaten too many grapes. He is breathing heavily and his wings are drooped slightly.
- 840g 4/10. 'F.T.' looks good today, he has perked up since last night and is very restless at times. The skin on his back has gone down and there is no sign of the air sac.
- 5&6/10. I have no scales at home, so am unable to weigh him, however, he is eating well and is very vocal. I would like to leave the top of the tank open, but he screams when I go near.
- 830g 7/10. Although he has lost a little weight, there has been a lot of feather growth. Today I started weighing his food.
- 830g 8/10. He is the same weight as yesterday. I tried giving him a little food, then leaving him for a couple of minutes, then going back and giving him a little more. The 7.30am feed is always the smallest - he is obviously not a morning bird! At 2.00pm he took 166g in one feed.
- 904g 9/10. His feather growth is excellent. He is very bright and likes to see what is going on around him. The note of his scream changes when he has had enough food. He has eaten a lot today and was not interested in his last feed at 10.00pm.
- 890g 10/10. He has lost 14g, which is not bad and is nothing to worry about. On 8/9/10 1,308g was taken, including lots of pinkies on the 9th. There is regurgitated apple on the bottom of the tank.
- 890g 11/10. Twenty-four hours have passed without him gaining any weight. However, his feather growth is excellent, his head feathers are a distinct brown and white, he has two lines of black breast feathers and his tail is white. His eyes are still very blue and his legs and feet are grey. He continues to bring up apple when he is full.
- 944g 17/10. I am not sure about the accuracy of the scales!
- 940g 17/10. I tested the scales and found them to be correct to within 4g-

- 5g. He is getting very vocal and starting flying exercises.
- 944g 14/10. His growth seems to be levelling off a bit. I expect it to be Tuesday or Wednesday before there is any further growth. Today he ate his first whole mouse and, I think, he enjoyed it. There are a lot of light coloured pin feathers on his neck and he is preening very well.
- 990g 15/10. He is eating well, but is fussy, he has to have apple and pear first or he will not take the food. His eye lashes are very long, his face is blue and the skin on his back is almost mauve. He is practising flying and his legs and feet are strong and he has started to perch. He was not interested in the 10.00pm feed.
- 1010g 16/10. He passed the 1kg mark today. His feeding is slow now and he was not keen to eat at 8.00pm and 10.00pm.
- 994g 17/10. He lost weight overnight, having taken only 500g of food yesterday. He is very fussy and not interested, so his feeds may be cut to 8.00am, 1.00pm, 5.00pm and 9.00pm.
- 986g 18/10. He is still losing weight. He is not keen on feeding and is almost having to be force fed. I prefer to give him just a little rather than force feed him. Later he took 114g of food at 8.00pm and when I tried again at 10.30pm; he took 112g. He is also taking food out of his bowl.
- 1025g 19/10. I was kept awake part of the night by his squeaking and whimpering. His weight has risen by 39g - surely his weight changes are too erratic! There is always a bowl of food left in his box and he takes a little food out of it. Over the past 12 days his average daily food intake has been 580g. He is very inquisitive.
- 980g 20/10. He has lost 45g since yesterday. Why does this happen? The first thing this morning he would not eat, but I put a bowl of food in with him and he is eating from it as I write this. He eventually took 98g by himself.
- 990g 21/10. He is very slow to feed, but bright and alert - is his weight levelling off? His feather growth is excellent at present.
- 990g 22/10. Yesterday his food intake was the lowest recorded. If offered food he was not interested, but if it was put at the back of his gape, he took it. At 9.00pm though he took 158g of food.
- 997g 23/10. He has lost a little weight. Perhaps I worry unduly, for despite his erratic feeding behaviour, he looks very well.
- 972g 24/10. He is feeding okay today. All his wing feathers are fully grown and he is exercising well. This evening he spent 15 minutes sitting on my arm watching *Star Trek* on TV, so obviously he has dodgy taste like me.
- 962g 25/10. The way that 'F.T.' behaves makes me feel that these weight

fluctuations must be normal, for he looks very well, he has good feather growth and is very alert and active. His droppings are as only a hornbill's droppings can be. He uses them to practise his walling technique - I looked in to see him picking up droppings and a small piece of fruit and placing them on the side of the box, and then tapping them into place.

- 960g 26/10. The pin feathers on his neck, back and underparts are opening out and he now has a perch which he uses very well.
- 948g 27/10. He is still losing weight, but feels plump. When I was feeding him today, it seemed to me that he tried to show when he had eaten enough, by turning his back to me and putting his head in the corner of the box. Of the 102g of apple taken during the 8.00pm feed, 22g were regurgitated. How does he do it?
- 920g 28/10. A weight loss of 28g. He has lost weight on all but one of the previous nine days. Geoff advises cutting back to three feeds.
- 880g 29/10. Now, if he does not take the food, I just leave him.
- 850g 30/10. 'F.T.' is now staying at the park at night.
- 812g 31/10. He is perching well and seems to be eating a fair bit by himself.
- 812g 1/11. He screams when I walk away after he has been fed. His feathers are becoming lighter in colour.
- 774g 2 & 3/11. It was my weekend off and I left 'F.T.' at the park.
- 796g 4/11. His weight is moving upwards again, but for how long? He seems in excellent fettle after the weekend.
- 840g 5/11. His weight is continuing to increase. He much prefers to be out of the box, rather than in it. The perch will have to be raised, because his tail is getting mucky.
- 786g 6/11. Did I read the scales correctly yesterday? Whether I did or not, he is eating well. I am spraying him now to get him preening, because his plumage is looking dry and mucky.
- 810g 7/11. He is looking good. I will not be able to weigh him for much longer, as he gets very agitated and I cannot keep him still long enough to get an accurate reading.
- 814g 8/11. It looks like a Wrinkled Hornbill now. I am fairly sure that it is a male, but I expect I will be proved wrong.
- 820g 9/11. His weight continues to increase. He eats all alone now and has done really well during the last couple of days.
- 836g 10/11. He is very well, vocal, and becoming stropky.
- 850g 11/11. Weighed him for the last time. The sad thing today is that his nest mate died. It was attacked by the parents and never recovered. In the future we will have to make sure that the young are removed earlier.

THE INTERNATIONAL FUND FOR AVIAN RESEARCH

What IFAR has achieved - what it still aims to achieve

by Brian Byles

Whether as individuals, whether we are connected with organisations that cater for the numerous branches of aviculture, or have an interest in wild birds, most of us are aware of problems which birdkeepers and ornithologists encounter. These problems need to be solved if we are to be successful and to make progress in what for some is a business but, for most, is a rewarding hobby. Avian management techniques need to be improved, a better understanding of nutrition is vital and, probably most of all, we all want to know how to deal more efficiently with avian health problems.

It is for these reasons that the International Fund for Avian Research (IFAR) was established. Administered by Professor John Cooper FRCVS (Chairman), Dr Francis Scullion MRCVS (Scientific Adviser) and myself, the former Editor of the magazine *Cage & Aviary Birds* (Secretary), the aim of IFAR is to provide grants to people who are undertaking avian research of various kinds.

Mauritius Pink Pigeon *Columba mayeri*

Thanks to generous donations from individuals and interested companies, IFAR has been able to help important projects. During 1997 it gave £750 (approx. US\$1,200) to a group of specialist veterinarians and biologists - Andrew Greenwood, Mike Peirce and Kirsty Swinnerton - who are carrying out a study into Leucocytozoon infection in the Mauritius Pink Pigeon. The group had already established that the infection causes significant mortality in both wild and captive individuals, particularly juveniles of the species on Mauritius. The grant covered the cost of examining blood smears from Pink Pigeons and potential reservoir hosts by Dr Mike Peirce to establish the overall and seasonal prevalence of the parasite.

Others who have been supported by IFAR - and its predecessor - Cage & Aviary Birds Avian Research Fund - include: Philip McGowan BSc, who undertook field studies into tropical pheasants threatened with extinction; Neil Forbes FRCVS, working with Dr Hawkey at London Zoo, undertook research into detecting avian tuberculosis by haematological examination; and Mark Pilgrim, based at Liverpool's John Moores University, looked into the taxonomic status of *Amazona autumnalis*.

Beak and Feather Disease

Also awarded grants: Dr Branson Ritchie, University of Georgia, USA, to assist research into psittacine beak and feather disease; Dr John Baker, now retired from Liverpool University, to research blood chemistry analysis regarding the premature death of Budgerigars *Melopsittacus undulatus*; and the University of California at Davis. The last named received a grant to build and equip aviaries for parrots being used as part of a research project.

Money has also been given to Dr Peter Robertson, Lowland Gamebird Unit, Game Conservancy, to take part in a five year joint study of pheasant ecology in China, and Philip Boydell MRCVS, of the Animal Medical Centre, Chorlton, Manchester, has been assessing the prevalence of ocular lesions in captive birds of prey in the UK. Over 5,000 birds have been examined. The results demonstrate that there is a high prevalence of ocular damage in rescued wild birds and a significant incidence of ocular disease in captive and working birds. A number of species appear to have a potential for certain conditions, possibly as a result of indiscriminate breeding.

Bernard Okech, of the Department of Zoology, University of Nairobi, has been given a grant to survey the blood parasites of free-living and captive non-domesticated birds in Kenya. The study is being conducted in collaboration with the Ornithological Department, National Museum of Kenya. Another veterinarian to receive help from IFAR is Dr Edith Singine, based in Dar es Salaam, Tanzania. She is undertaking research into comparative morphology of blood cells of free-range chickens and flamingos.

Megabacteria

Megabacteria has become an avian problem in many parts of the world in recent years, but thanks to the work of Tom Pennycott, Senior Veterinary Investigation Officer, at SAC Veterinary Services Avian Health Unit, Auchincruive, Scotland - and a grant from IFAR - captive birds in many parts of the world could enjoy much better health.

First described in Canaries in Holland, megabacteriosis has been diagnosed in a number of species including Budgerigars, grass parakeets *Neophema* spp. and lovebirds *Agapornis* spp. Dr John Baker, while working for the Budgerigar Society in 1966, suggested that the condition was introduced to exhibition Budgerigars in the early 1980s, rapidly spreading as a result of widespread movement of birds kept by breeders.

The clinical signs of birds with megabacteriosis, according to Tom Pennycott, are not dramatic and fairly non-specific. Birds are seen to be 'soft' with a hunched appearance and fluffed-out feathers. Changes in droppings may be apparent, from a slight looseness to severe diarrhoea. Birds often appear to be feeding, but closer observation shows that they are grinding a lot of seed instead of eating it.

Megabacteriosis, Mr Pennycott reports, is usually confirmed by post mortem examination. The birds are thin, with wasting of the breast muscles. The feathers around the head may be covered in dried regurgitated material and the feathers around the vent often stained with faeces. Changes are found in the glandular and muscular stomachs of the birds, which is where the megabacteria can be found. The lining of the glandular stomach becomes rough, raised and discoloured. Megabacteria can be readily found at post mortem examination when scrapings from the glandular stomach are examined under a microscope. These organisms are very large - ten to 20 times the length of the bacterium *E. coli*. However, although megabacteria are instantly recognisable, their true identity remains unknown and efforts to culture the organisms have given ambiguous results.

It is even unclear whether megabacteria have actually caused damage to a stomach, seen during post mortem, or whether they are organisms found in normal birds, but which have multiplied to an excessive extent. Tom Pennycott suggests that observations in an infected aviary indicate that, after reaching a peak of mortality, losses then decline to a low level, possibly after the development of some degree of immunity. Post mortem examinations of Zebra Finches *Taeniopygia guttata* and Budgerigars have revealed that megabacteria can be detected in young, unweaned birds, suggesting one route by which infection spreads within an aviary. The effective treatment, Mr Pennycott suggests, is unclear. Amphotericin B at 1g per litre of drinking water is said to be effective, but when used at a lower dose in a small number of birds was unsuccessful, as was enrofloxacin (Baytril 10% Oral Solution) at 5ml per litre of drinking water.

Quail Research

During 1997 IFAR gave a grant to Reuben Girling, a York-based aviculturist, to undertake an investigation into the breeding periodicity, early mortality and close ringing age of Chinese Painted Quail *Excalfactoria chinensis* reared by members of the Foreign Bird League. A grant has also been given to Robert Whale, of the Pakistan Galliformes Project, to help finance his involvement in a programme of observing pheasant populations in Pakistan, recording other factors, such as disturbance and habitat removal, and the estimation of tolerance levels that a local population will sustain before becoming affected. The programme includes the collection of information about species in areas not surveyed before.

Vets at 'The National'

Since being appointed as the official veterinarian at the National Exhibition of Cage & Aviary Birds, Professor Cooper has built up a team to look after the show's bird hospital. They include Mark Evans MRCVS, Siuna Whitehead MRCVS, and Dr Francis Scullion MRCVS. In addition,

as IFAR's Chairman, Professor Cooper, has encouraged a number of undergraduates and postgraduate veterinary students from several parts of the world to help run the bird hospital at the National Exhibition to gain avian experience. Up to 1997 IFAR paid their expenses to attend. This year sponsorship from Vydex Animal Health funded their travelling costs.

Expanding its role

IFAR has been expanding its activities. In addition to awarding grants to suitable research projects concerning both captive and free-living birds, it has introduced two new ways of providing assistance. In future, IFAR will consider the loan, or donation, of equipment which is necessary to complete various projects that will help those concerned with avian problems. In addition, professional and/or technical help - which could include visits to the project, by an expert in the field under study - will be made available.

'This is an exciting new venture,' says IFAR Chairman, Professor Cooper. 'It should prove of practical value to aviculturists, field ornithologists and veterinarians.' Already one of two incubators donated by Gary Robbins, of AB Incubators, of Stowmarket, has been sent on loan to Mauritius where it is helping to maximise the number of young Pink Pigeons being raised in captivity by Kirsty Swinnerton and the resident team. A further top-of-the-range incubator is available on loan to a suitable research project.

A network of specialists is being established. Those involved will be experts in specific fields who are willing to give advice on behalf of IFAR. In some cases they may travel in order to provide that advice.

IFAR Needs your sponsorship

The success or failure of important research projects could depend upon your support. IFAR receives numerous requests for assistance - both financial and material - but the extent to which it can help is dependent upon IFAR, in turn, receiving financial backing, equipment and/or product from those with an interest in the well-being of both captive-bred and wild species.

IFAR is looking for new sponsors. Current backers include John E. Haith Ltd, of Cleethorpes, Vydex Animal Health Ltd (Cardiff), AB Incubators Ltd, of Stowmarket and Harlow-based Rhone Merieux. The Beryl Thomas Animal Welfare Trust, in South Wales, is another very generous contributor to IFAR funds.

IFAR has also received support in the past from H. & S. Clark, London seed suppliers, Johnson's Veterinary Products of Sutton Coldfield, Pet Chef Parrot Foods, Haines Aviary Economy, Southern Aviaries (Uckfield),

Merehurst Books, Scotia Pharmaceuticals, the British Veterinary Zoological Society, the Australian Finch Society and magazine *Cage & Aviary Birds*. Without generous sponsorship from these companies and organisations - and welcome donations from individuals - IFAR could not function.

IFAR Needs your help

Supporting avian research takes money. As a result we hope that you will support IFAR by becoming a sponsor or by sending a donation to The International Fund for Avian Research, c/o The British Veterinary Association, 7 Mansfield Street, London W1M 0AT. All contributions will be acknowledged in writing and every individual and company which supports the fund, will receive a newsletter/report at the end of the year giving details of grant it has made, and the work carried out during the previous 12 months.

* * *

NATIONAL INCREASE

The Society had a small stand at the 1997 National Exhibition of Cage and Aviary Birds held at the NEC (National Exhibition Centre) Birmingham, Saturday - Sunday 6th - 7th December. Fourteen new members were enrolled and a number of subscriptions were renewed. The stand (part of which was loaned to us by the Bristol Zoological Gardens) was designed by Council Member, Rosemary Wiseman, who was also the Stand Manager. The display included enlargements of photographs used to illustrate articles in recent issues of the *Avicultural Magazine*. It is the second year that the Society has been present at this event. At the 1996 exhibition we also enrolled a number of new members and answered numerous enquiries about the Society. The space for the stand was provided free by the exhibition organisers, to whom we are most grateful, and we very much hope that we will be invited back for the 1998 exhibition.

BREEDING THE LESSER FLAMINGO *Phoeniconaias minor*

by Roman Alraun and Nigel Hewston

Introduction

The Lesser Flamingo *Phoeniconaias minor* is the smallest of the six kinds of flamingo. It is the most numerous in the wild, probably outnumbering the populations of all the other five forms added together. It is fairly widely kept in captivity but seems more reluctant to breed than the larger flamingos for reasons which are not entirely clear, but may be linked to Lesser Flamingos being less hardy, or to their much larger colonies in the wild. This article describes the successful nesting of Lesser Flamingos in a private collection in Germany in 1992, which is believed to be the first breeding of this species in Europe, and summarises more recent successes in other German collections. The species is believed to have bred at least occasionally at zoos in the USA and several times eggs have been laid at the Wildfowl & Wetlands Trust, Slimbridge, UK.

The colony

Four juvenile Lesser Flamingos were obtained in April 1986. By 1992 there were 33 birds (18.15) in the group. Also in the enclosure were 2.3 Chilean Flamingos *Phoenicopterus chilensis* a variety of ducks and some Red-breasted Geese *Branta ruficollis*. The ducks and geese initially caused no problems for the flamingos, except for Canvasbacks *Aythya valisineria* damaging nests by digging at the base, but the geese eventually proved to be aggressive so the flamingos now share the enclosure only with small ducks. Most of the flamingos are full-winged, which seems to make mating easier for the males. A pinioned male Chilean Flamingo obtained late in 1992 to make the flock up to 3.3 has failed to mate successfully, while a full-winged male has fertilised two females. A pinioned female Lesser Flamingo however, which came from Tanzania in 1960, laid in 1995 and is still in excellent condition.

Housing

The birds are kept in an enclosure of approximately 800sq m (approx. 8,600sq ft), with a pond measuring about 20sq m (just under 215sq ft) and 50cm (approx. 1ft 10in) deep which is allowed to overflow to cover another 10sq m (approx. 108sq ft) in the breeding season. Part of the pen is planted with conifers. The birds stay in this enclosure all year round and have a lined house which is 80% transparent and which they use readily.

Food includes Mazuri Waterfowl Maintenance, Waterfowl Breeder and Flamingo (E), Kasper Faunafood Seaduck Diet and Floating Duck Diet,

also shrimps and sometimes algae meal. Finely grated carrot is occasionally added to the food. In the early years the Lesser Flamingos were given calf milk which they took readily, but after two years they stopped taking it so now the food is mixed with water. All the food is soaked overnight in two buckets which are half-filled with food then filled to the top with water and fed at 4.00pm the next day. The morning feed is one bucket of dry food scattered on the water.

Breeding

In mid-May 1991 it was noticed that one of the female flamingos was dirty on the back. A few days later, while turning the earth on the nest site, a pair was seen mating only 3m (about 10ft) away. Following this other copulations were observed by various pairs.

On 30th May at 9.10pm the first egg was seen on a nest mound. The female was one of the first four birds and therefore just over five years old. The egg weighed 106g and measured 86 x 55mm. The egg was incubated by both parents alternately. On 3rd June a second female laid, this egg measured 86 x 54mm and weighed 110g. This female was paired to another female and did not seem interested in the males. Neither egg was fertile.

Cold, wet weather around 10th June caused interruption and eventual abandonment of incubation. Other females which were heavy did not lay, and no longer looked heavy. Copulations ceased after 15th June. Early on the 26th, with the temperature at 26°C (68°F) and humidity at 90%, a group of males was again nest building. Males were seen mating with each other and single-sex male and female pairs were seen associating. No female pairs were seen mating, though they were tightly bonded. One female was seen attempting to mount another but no mating took place. Apparently homosexual males have been seen to chase and mount lesbian females.

In 1992 copulations were observed from the beginning of May. Around the 17th there was complete calm, with no mating or nest building. It was very hot, over 32°C (89.6°F). The birds seemed uneasy. At the end of the week the nest area, which had been dry, was flooded and nest building began again immediately. The following week mating also recommenced and the birds became more active.

On 30th May an egg was laid by the female which had laid on the same date the previous year. This egg died at about ten days. A new pair laid on 6th June and on the 7th the female which was paired to the one which laid on 3rd June 1991 also laid. The other female from this pair did not lay. This egg was found off the nest the next morning and was replaced. A single Chilean female tried to incubate it but it was knocked off again and she broke it trying to retrieve it. This was a pity as the Lesser had mated

often with a male and it would have been interesting to see whether the two females would have reared a chick. On 8th June this female was again mated but did not re-lay, though re-laying has been recorded in flamingos when an egg is lost. After 20th June all went quiet until 5th July when pairing recommenced, and one male was again chasing the female which laid on 7th June.

On 6th August one female was found dead on the water. She weighed 1,965g and was found on post mortem examination to have a fully developed egg yolk inside and a large active follicle on the ovary. Death was caused by a heart attack, probably stress-induced.

The egg laid on 6th June was on a nest under a tall cypress and close to a fence. It pipped on 2nd July; the chick could be heard and its beak was visible. It hatched the next day. It was possible to photograph the whole process as it was very hot and the female stood on the nest and watched as the chick hatched. After 24 hours the chick tried to stand. It ate the remaining pieces of eggshell and was fed by the parents. On the 4th both parents oiled themselves extensively; the preen glands were clearly visible. They oiled themselves thoroughly in order to transfer oil to the chick.

On 7th July at four days old the chick was jumping around on the nest mound like a goat kid. It left the nest several times for short periods, but went back to the nest straight away. The next day the chick could stand on one leg to preen. It fell over when flapping its wings as if trying to fly, but righted itself immediately. It made longer excursions from the nest and was accompanied by both parents. It was also followed and pushed around by single females, including the Chilean. The whole flock gathered behind the chick. The parents carefully guided the chick back to the nest. Because of the attacks by the other birds the chick had to go through water and mud to get back to the nest, and was shivering, so was brooded by its father on the nest. It was often brooded during the day by both parents but predominantly by the male, with the mother on the nest at night.

Later this day the pair with the chick were separated from the other birds as they all wanted to take over the chick, despite having pecked at it earlier. A pair of Chileans had attacked the parents on the nest and they had not been able to defend themselves. The chick sought out a new nest mound to roost on and was brooded by its mother.

On 10th July, at eight days old, the chick was seen to bathe for the first time, albeit in a small puddle. It shook and preened itself just like the adults. The chick took the lead in again finding a new mound to roost on, and was brooded by the male during the day and the female at night.

The chick took food (Waterfowl Maintenance) from the water for the first time at ten days old. At around 9.30pm it had already been sitting on the new mound for some time and was ready to roost. It called to its



Photo Roman Alraun

Lesser Flamingo with one day old chick

mother but she stood 2m (6ft 7in) away and slept with her head under her wing. The male stood over the chick, which called and called but with no response from the female. It moved to another mound closer to her but she still seemed unconcerned, though the male was agitated. After 11.00pm it was too dark to see any more. At 4.00am the next morning the chick was



Photo Roman Alraun

Lesser Flamingos with four day old chick on the nest, shaded under a cypress tree. The male is on the left

asleep on the same mound without its mother. At 7.00am the parents fed it and it also took some food from the water. At 8.00pm it was back on the new mound and after a lot of 'cheeping' its mother came over and sat down, brooding the chick under one wing.

The next evening the chick sat on the nest at 8.45pm and waited for its mother, who brooded it as on the previous night. At 15 days old it stood on one leg on the nest to sleep. It had not been brooded by its mother for two days.

On 21st July, at 19 days old, the chick was ringed with a 19mm ring. This was removed later as it was obviously too big. A 14mm ring is a better size for this species, and 16mm for Chileans. The chick and its parents were let out of their temporary enclosure as all the other birds seemed used to the chick by now. It was fed in the evening by its mother and then fed with its father at the bowl. It was much more often with its father than with its mother, and the male still protected it if it was harassed by other birds. In the evening the pair and chick were put back into the

small enclosure to ensure that nothing happened to the chick overnight. From 24th July it was left with the flock at night.



Photo Roman Alraun

Lesser Flamingos with chick

At 23 days old the bill was starting to grow curved and was turning pale mauve. At 32 days the chick was about 50cm (19¾in) tall, and had therefore grown at an average of over 15mm per day. This very rapid growth may be to enable chicks to walk long distances at an early age. At Etosha Pan in Namibia chicks have been recorded walking 80km (approx. 50ml) to water as the pan dries out.

On 13th August the young flamingo, which had been named 'Philip', was seen to bathe energetically for the first time, demonstrating his now powerful and well-grown wings. The quills of the flight feathers were visible. On the 14th he was six weeks old and his back reached his mother's breastbone. He had to bend his neck to be fed, otherwise she could no longer feed him easily. The down on his crown had been replaced by grey feathers. On 18th August 'Philip' was feeding on flamingo food from the bowl with his father, who watched over him, keeping at a distance three other flamingos which were trying to feed.

In 1993 and 1994 the Lesser Flamingos failed to lay. In 1995 three eggs were laid, but only one was fertile. The parents did not incubate it, so the egg was hatched, and the chick reared, by another pair. Both the young birds are males. The legs change from grey to red at three years old. Factors involved in stimulating breeding appear to include freedom from disturbance, warmth, sunlight and damp, marshy ground. At temperatures above 20°C (68° F) the birds start to build on prepared nest sites whenever the ground is made moist by rain, overflow from the pond, or soaking with a hosepipe. Most of the birds build nests, including some single males and single-sex pairs of both sexes. However, they dislike rainy weather, and if it rains for more than two days at a time, pairing, mating and nest building stop completely. In 1996 and again this year the Lesser Flamingos failed to lay.

Chilean Flamingos laid infertile eggs in 1994, and in 1995 two fertile eggs were laid by females paired to different males but both fertilised by the same (full-winged) male. These both hatched but the chicks died at 11 and 31 days. In 1996 three pairs produced six eggs, and three young (2.1) were reared, all three from one male and two females. This year four eggs had been laid by the end of July, two were infertile, in one the embryo died, and another from the same pair was also fertile. Eggs are collected and put into an incubator until just before hatching, when they are put back into nests for hatching and rearing.

In 1993 Lesser Flamingos also bred at the Friedrichsfeld Zoo in Berlin. A flock of 23 birds produced 16 eggs, from which two chicks were reared. A private breeder in Schleswig-Holstein, who keeps large groups of four kinds of flamingos, has had remarkable success breeding Lesser Flamingos. His group of c.50 birds live in a house c.200 sq m (approx. 2,150sq ft) made from double-glazed panels with a sliding roof which can be opened. In 1992 one infertile egg was laid, in 1993 a large number of eggs resulted in eight young, there were no eggs in 1994, four young in 1995, one in 1996, and this year 13 young from 14 or 15 eggs. The level of success achieved in this sheltered situation seems to confirm that weather is an important factor in breeding Lesser Flamingos in northern Europe.

Roman Alraun breeds waterfowl and flamingos at Neustadt, Germany. His notes were translated and adapted for publication by Nigel Hewston, who was formerly flamingo coordinator for the Federation of Zoological Gardens of Great Britain and Ireland.

THE SOCIETY'S VISITS TO RODE AND BRISTOL ZOO

by Stewart Pyper

On Saturday 13th September a small group of members visited the Tropical Bird Gardens, Rode and were shown around on what was a lovely, warm day by Mike Curzon, a director. Mike has promised to write about the breedings and other noteworthy happenings there during 1997, so I will confine myself here to mentioning the new enclosure for ground hornbills and the fact that members saw both Edwards' and Desmarest's Fig Parrots. Rode is the only public collection in the UK exhibiting both these species.

The following day almost 30 members and their guests visited Bristol Zoo at the kind invitation of the Director, Geoffrey Greed, who is also the Hon. Secretary/Treasurer of this Society. At present the zoo is undergoing a major reconstruction programme. Regrettably it is behind schedule and as a result the striking new exhibit which will house a collection of Philippine birds was not yet ready. The aviary will feature a walk-through section which should be popular with both aviculturists and the general public. The old tropical house will provide heated indoor accommodation for the birds. (When this aviary is opened a detailed report about it will appear in the magazine.) A new lake for the colony of flamingos will replace the aviaries opened some years ago by our President. A special feature at Bristol Zoo is the large aviary with running water and plenty else to occupy the group of at least ten Keas. The European Studbook for this species is held at Bristol Zoo. Among other birds we saw were Yellow-throated Laughing Thrushes, Azure-winged Magpies, Rothschild's Grackles or Bali Starlings, Toco Toucans, Black-winged Stilts, Kookaburras and various pigeons and doves, including the Nicobar Pigeon and the chestnut-naped race of the Green Imperial Pigeon.

Behind the scenes we were shown a selection of young reptiles, including a number of young Woodland Crocodiles hatched at the zoo. As on our previous visits to Bristol Zoo, we enjoyed an excellent lunch which was arranged by Geoffrey Greed and our thanks go to him and his staff for making it such an enjoyable day.

* * *

BOOK REVIEW

AUSTRALIAN FINCHES - a colourful guide

Arguably Australia's leading authority on its native finches in aviculture, Russell Kingston is known worldwide for his expertise. His first book, *The Complete Manual for the Keeping and Breeding of Finches* (1994), a tome of nearly 500 pages, is the standard work on the subject. His most recent book is in Australian Birdkeeper's *A Guide to...* series and covers *Australian Grassfinches*.

More than 70 pages are packed with information and colour. In his introduction the author gives some reasons for the popularity of these birds: 'their quiet songs do not disrupt sensitive neighbours. They add colour to the garden or indoor conservatory, are always lively and may be housed together in a mixed collection in a planted aviary, or equally, they may be kept in relatively small cages.'

Although written primarily for the Australian market, most of the information is equally applicable in Europe. Some of the seeds mentioned are unknown here, however. The notes on management and nutrition are followed by the section entitled Australian Grassfinches in Profile. Every species is covered under a series of headings such as Natural Breeding Season, Breeding Ages, Courtship, Nest Description, Roosting Nest, Number of Eggs, Incubation and Colour Mutations. It is concise but very informative. A distribution map for each species is included.

The photographs are not merely decorative but highly practical in many cases. For example, plumage differences or crown shape in male and female are shown for Chestnut-breasted Munias, Diamond Firetails, Bicheno Finches, Masked Grassfinches, Painted Firetails and others. Visual differences are illustrated with diagrams for some species. This is an especially useful feature of the book. Various mutations are also included, such as the lutino Blue-faced Parrot Finch and the white Masked Grassfinch. The average number of colour illustrations per page is about three, so this book should be popular, as well as useful.

This guide is available price £13.95 plus 75p postage each from The Bookshop, Southern Aviaries, Tinkers Lane, Hadlow Down, Uckfield, East Sussex TN22 4EU. Tel:01825 830283 & 830930/Fax:01825 830241. It is also available from other avicultural booksellers.

Rosemary Low

CORRESPONDENCE

Sir,

I greatly enjoyed reading the article 'Twenty-five years at Cobham' by Raymond Sawyer in issue No 2 for 1997. I am sure the article was much appreciated by members, especially those who know the collection.

I would like to comment on the photograph captioned 'Red Lory *Eos bornea*' which accompanied the article. The identity of this bird will perhaps never be established with certainty - but it is not *bornea*. As it is such an interesting bird, excellently photographed by Thomas Brosset, it would be a pity to let the caption pass unremarked. A rather lengthy explanation is necessary. Perhaps it is best to quote from my *Encyclopedia of the Lory* to be published by Hancock House in 1998. There is a long preamble before the bird is mentioned, however, which hopefully makes it clear that nobody has yet been able to define convincingly either *Eos s. squamata* or *E. s. riciniata*.

'Violet-necked Lory (*Eos squamata*) Note: the small size and variable markings (except in *obiensis*) characterise this species. It has given rise to much confusion over the years. For example, Salvadori (1891) listed three species - *wallacei*, *insularis* and *riciniata*, all of which are now considered synonymous with *squamata* (which was lacking from his catalogue). But what exactly is the nominate race? No one seems able to answer this question. I believe that the species is still evolving, with much plumage variation within each population. The sub-species *obiensis* is distinctive and easily recognised. But how does one distinguish *squamata* from *riciniata*? According to Hubers (1996b), who examined a number of museum skins, in the nominate race the crown is red, the collar is violet-blue and can be complete, absent, wide or narrow; the shoulder feathers [scapulars] are black-blue. In *riciniata* there is a wide violet-blue collar with variable grey shading. In most birds the collar extends to the middle of the head [crown]. The shoulders are red, Forshaw (1989) is uncharacteristically vague, remarking on the variable plumage coloration and the violet-blue collar around the neck which is 'broad and well-developed in some birds but almost entirely lacking in others'. He describes *riciniata* as having a 'prominent violet-grey neck collar, usually extending up to hindcrown; some birds have violet-gray crown but red nape'.

'In his descriptions there are only two features which are different: the nominate race has a violet-blue collar and dull purple scapulars tipped with black and *riciniata* has a violet-grey collar and red scapulars. Unfortunately, not all birds fit neatly into one category or the other; some have only a few dark feathers on the scapulars. In a species which exhibits such variable coloration, is there justification for separating these two races?

I suspect there could be a good case for naming two species: *obiensis* from the island of Obi and *squamata* (it was named first) from all the other islands within the range. However, here I follow current nomenclature and consider them as sub-species of *squamata*.'

'It is worth noting that Wallace's Lory (*Eos wallacei*, Finsch (1864)), from the islands of Wiageu, Gebe, Batanta and a small island near Misool, is figured in Mivart (1896). It was said to differ from *riciniata* in that the purple of the collar did not extend up the nape to the head - but then Mivart admitted that this character was not constant. It seems that nobody has been able to define the sub-species.'

'Descriptions *Eos squamata riciniata* is red on the head with violet-blue or violet-grey on lower cheeks and, in some birds, also on nape and crown; underparts violet-blue or violet-grey broken by a red band on the lower breast. Scapulars purple or red, greater wing coverts and flight feathers red, margined and tipped with black; tail purple-red above, brownish-red below; under tail coverts purple or blue. The beak is orange, the cere and skin surrounding the eye white or pale grey, feet grey and iris orange-red or yellow.'

'Length: 26cm (10in).'

'Weight: 110g.'

'Immatures are variably marked; the red of the underparts is mottled with dull blue or almost absent and there may be bluish markings on the ear coverts. There are more black feathers, than red, on the wings, in some immature birds. The beak and iris are brownish.'

'Further confusion is created by the existence of a form which lacks red on the head or breast and has only a narrow line of dark blue on the neck; it has the abdomen dark blue but differs from *obiensis* in having the upper part of the wings almost clear red, and in its larger size. In Thomas Arndt's *Lexicon of Parrots*, volume 1, what appears to be an immature bird of this form is depicted on page 6, captioned as *Eos squamata squamata*. Perhaps this is the nominate race. If so, it is either extremely rare or inhabits an island from which birds are very rarely collected. In 20 years I have seen only one bird of this form, an adult with very clear red plumage, which was in the collection of Raymond Sawyer of Surrey in the mid-1970s.'

**Rosemary Low
Mansfield, Notts.**

NEWS & VIEWS

LEADING AVICULTURE INTO THE NEXT MILLENNIUM

Bird Keeping in Australia, Vol.40, No.11, carried advance notice of Birds '99 - Leading Aviculture into the next Millennium - an International Avicultural Convention to be held the 18th - 21st June 1999, at Brisbane Convention Centre and Exhibition Centre. Further details are available from:- PO. Box 600, Nundah, Queensland 4012, Australia. There was also notice of the 7th Overseas Avicultural Tour which is planned for the June - July period of 1998 and will include visits to 13 bird parks and zoos in seven European countries. It will include visits to Walsrode Bird Park and Loro Parque and will return to Australia via Singapore, so that the participants have the opportunity to visit Jurong Bird Park.

* * *

SPECIAL INTEREST IN AFRICAN PARROTS

Dr Roger Wilkinson, Curator of Birds at Chester Zoo and an Avicultural Society Council Member, has become a Scientific Advisor to the World Parrot Trust. In addition to reviewing funding proposals and other matters, Roger will take a special interest in African parrots and liaise with Professor Mike Perrin of Natal University, South Africa.

* * *

EXCELLENT BREEDING SEASON

In spite of having moved many of its birds to new accommodation as part of its redevelopment plan, and coping with the vagaries of the British summer, Paignton Zoo reported an excellent 1997 breeding season. Among its most notable successes was the breeding of an Australian Cassowary *Casuarius casuarius* in the new woodland enclosure. In the Brook Side Aviary, Little Egrets *Egretta garzetta* bred for the first time and a young pair of Bali Starlings *Leucopsar rothschildi* raised four young from two broods. Chilean Flamingos *Phoenicopterus chilensis* in their first year on the new lagoon raised three chicks, despite the attention of the predatory local Herring Gulls *Larus argentatus*. The Abyssinian Ground Hornbills *Bucorvus abyssinicus* at last succeeded in rearing one of their own chicks, after all the previous chicks had to be hand-reared by Jo Gregson. Other species which bred successfully included Jackass Penguins *Spheniscus demersus*, Snowy Owls *Nyctea scandiaca*, Sarus Cranes *Grus antigone* and Crested Quail Doves *Geotrygon versicolor*.

* * *

SUCCESS WITH PARROTS AND CRANES

Paradise Park, Hayle, had what was described as a reasonable breeding season for a collection of its size and type. Among the parrots bred there were Hyacinth *Anodorhynchus hyacinthinus*, Buffon's *Ara ambigua*, Military *A. militaris*, Illiger's *A. maracana* and Hahn's Macaws *A. nobilis*, Keas *Nestor notabilis*, Leadbeater's *Cacatua leadbeateri*, Triton *C. galerita triton*, Lesser Sulphur-crested *C. sulphurea* and Roseate Cockatoos *Eolophus roseicapillus*. The Hyacinth Macaw chick, which was hand-reared, was born with a crooked bill which required corrective surgery by vet Andrew Greenwood. Two trios of Red-faced Lovebirds *Agapornis pullaris* excavated nests in blocks of cork and each laid two clutches, but this was as far as they got. Cranes did well, with Wattled *Bugeranus carunculatus*, Stanley *Anthropoides paradisea*, Sarus *Grus antigone* and Crowned Cranes *Balearica regulorum* all producing young. Village Weavers *Ploceus cucullatus*, Yellow-fronted Woodpeckers *Melanerpes flavifrons* and Hoopoes *Upupa epops* were also successful and keeper Dale Jackson hand-reared a Chough *Pyrrhocorax pyrrhocorax*, which is a small step forward in the plan to use aviary-bred birds to reintroduce this species back to the coast of Cornwall.

* * *

GROUSE SEES RED

A jogger making his regular moorland run alongside Derwent Reservoir in the Peak District was attacked by a male Red Grouse *Lagopus lagopus scoticus* and needed medical treatment for a cut and bruising on his left buttock. The attack was put down to the fact that the jogger was wearing a red T-shirt.

* * *

LESSON TO BE LEARNT

Robert Callaghan has sent another cutting from the *Staffordshire Sentinel*, this time about a pair of Citron-crested Cockatoos *Cacatua sulphurea citrinocristata* which belong to Barbara Poole, the science teacher at Trentham High School. After five years during which each year the pair killed their chicks or they died for other reasons, this year Mrs Poole stepped in and hand-reared the two chicks, one of which she took to school to give her pupils an insight into the rearing of young birds.

* * *

NEW MANAGING DIRECTOR

Tony Richardson is the new Managing Director of the Wildfowl and Wetland Trust. His predecessor, Dr Myrfin Owen, will act as a consultant.

JOHN G. WILLIAMS

John G. Williams died 28th December, aged 84. He was for 20 years Curator of Birds at what is now the National Museum of Kenya, and is probably best known for *A Field Guide to the Birds of East Africa*. Williams's Lark *Mirafra williamsi*, endemic to the deserts of northern Kenya, bears his name.

* * *

BISHOPS ON THE LOOSE

An increasing list of escaped or released exotic birds are becoming established in Portugal according to Helder Costa, Conçalo Lobo Elias and João Carlos Farinha writing in *British Birds*, Vol. 90, No.12:562-568. It has been estimated that there may now be 20,000 to 200,000 Common Waxbills *Estrilda astrild* living free there. The numbers of Red Avadavats *A. amandava*, Yellow-crowned Bishops *Euplectes afer* and Village Weavers *Ploceus cucullatus* are also on the increase, as is the number of Ring-necked Parrakeets *Psittacula krameri*. The Village Weaver, Common Waxbill, Red Avadavat, Zebra Finch *Taeniopygia guttata*, Black-headed and White-headed Munias *Lonchura malacca* and *L. maja* have all been found breeding there. Others, among them the Black-rumped Waxbill *E. troglodytes*, African Silverbill *L. cantans*, Cut-throat Finch *Amadina fasciata*, Red Bishop *E. orix* and Ring-necked Parrakeet, are probably also breeding in Portugal.

* * *

THE FIRST FOR TWENTY-SIX YEARS

More details have emerged about the kiwi chick hatched at Taronga Zoo, Sydney, Australia, the first to be hatched there for 26 years. It is a North Island Brown Kiwi *Apteryx australis* and was hand-reared by Bird Division keeper, Chris Hibbard, appropriately enough a New Zealander. He changed the breeding pair's diet and this is thought to have been an important factor in the successful hatching and rearing. The new diet consists of tofu (a soya product), ox heart, frozen peas and corn, diced banana, sultanas, wheat germ flakes, yeast flakes and a special kiwi vitamin supplement.

During the first four weeks, the chick lived a diurnal existence, but by the time it was four to six weeks old its 'nocturnal clock' seemed to be activated and it began to shun the daylight. Each morning though there was plenty of evidence that it had been very active during the night.

* * *

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Passerine and Pigeon & Dove Symposium

- a joint initiative by the EEP TAGs and ABWAK

**19th & 20th May 1998
at Bristol Zoo**

There are many species of pigeons and passerines in captivity throughout Europe, many of which are listed on the IUCN Red Lists. Captive breeding programmes exist for a number of species such as the Bleeding Heart Pigeons and the Bali Starling - of which there are reportedly only 14 left in the wild. Attention to these species has produced viable captive breeding programmes, but sustainable captive breeding of other species such as the Yellow-throated Laughing Thrush and Crowned Pigeons is yet to be achieved.

This two day symposium will cover a wide range of issues, including husbandry developments, captive breeding programmes, veterinary aspects and fieldwork.

Proposed speakers include:

David Jeggo	Joint Chair Passerine Taxon Advisory Group
Nigel Hewston	The Omei Shan Liocichla
Richard Meyer	Operation Chough
Nigel Collar	Conservation Priorities for Passerines
Stuart Evans	Australian Finch Society RADS Scheme
Dave Coles	Breeding the Genus Garrulax
Roger Wilkinson	Breeding African Starlings in Captivity
Duncan Bolton	Chair European TAG for Pigeons
Mark Damon	Researcher Crowned Pigeons
Joeke Nijboer	Nutritionist Rotterdam Zoo
Dave Wetzel	Co Chair North American Pigeon TAG
Simon Tonge	Zoological Society of London

The symposium is open to anyone interested in passerines and/or pigeons but particularly those working on a daily basis with the practical aspects of their husbandry.

Further information and registration forms available from:

Duncan Bolton, General Curator
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